METEOROLOGICAL COMMITTEE MINUTES

1874

355 _ 6

METEOROLOGICAL OFFICE

MINUTES OF THE PROCEEDINGS

OF THE

METEOROLOGICAL COMMITTEE,

1874.

LONDON:
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1875.

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MINUTES OF THE PROCEEDINGS

OF THE

METEOROLOGICAL COMMITTEE.

116, *Victoria Street*, *January* 5, 1874.

PRESENT:

Mr. Galton in the Chair.

Mr. De La Rue.	Sir E. Sabine.
Mr. Gassiot.	Major-General Strachey.

The Director was in attendance.

The Minutes of last meeting (December 22), were read and confirmed.

Mr. Scott reported that the time required for copying the entire hourly tabulations from the self-recording observatories would be $1\frac{1}{2}$ hours per day for two clerks, and that the expense of printing (500 copies uniform with the Quarterly Weather Report) would be 15*s*. per day, and of lithography (100 copies) 8*s*. or 9*s*. per day.

Resolved—That 100 copies of the hourly tabulations, for one year, be lithographed, commencing from January 1, 1874, and be offered to the public at a nominal charge of 1*l*. per annum.

Mr. Scott was instructed to reply to Dr. Stewart as follows:—

DEAR SIR,

I AM instructed by the Committee to inform you that they have been for some time past considering the possibility of issuing copies of the individual numbers for the 24-hourly readings from each of their seven observatories, for every element which is observed continuously, for the benefit of meteorologists who may be desirous of investigating the phenomena recorded by their automatic instruments.

I am to say that while they do not see the possibility of publishing such tabulations for past years, they are willing for the present year to issue quarterly lithographic copies of such tabulations to those who may be willing to subscribe the amount of 1*l*. per annum. This subscription will not cover the outlay which will be incurred.

I am to express the hope that this step will meet the wishes of the memorialists.

Prof. Balfour Stewart, F.R.S.

Submitted—The results of a comparison of the five-day means for temperature for eight months (Minutes 1873, p. 76), as obtained by the use of the planimeter from the plates in the Quarterly Weather Report, with the published means, from which it appeared that the greatest difference was only 0°·3, and the mean difference did not exceed 0°·1.

Resolved—That a comparison of the planimeter readings from the original photographic records be made for the same period of time.

Mr. Scott reported that he had received another telegraphic despatch from General Myer relative to synchronous observations (Minutes 1873, p. 70), and had issued invitations to several observers to undertake the work of co-operation.—Approved.

Read—A letter from Mr. Crossley asking the Committee to supply him with waxed paper, gratis, in consideration of his having commenced to furnish them with copies of his photographic records.—Granted.

Mr. Scott reported that he had had some correspondence with Mr. White, of Glasgow, relative to the electrometer, mentioned at last meeting, and submitted to the Committee a deposit receipt for 74*l*. the value of the instrument which he had required Mr. White to place in his hands as security for completing the requisite alterations by the middle of February.

Mr. Scott further stated that he intended presenting the deposit receipt for payment, if the instrument was not returned at the time named.—Approved.

Reported.—That the Daily Weather Charts had been supplied to the Rev. G. J. Style, Giggleswick Grammar School, in exchange for observations.

Mr. Scott reported that he had inspected the Telegraphic Reporting Station at Portsmouth, on the 31st ult. The instruments were found to be in fairly good order. The observer, J. Hoar, is shortly leaving Portsmouth, and Mr. Scott stated that he was making inquiries with the view of replacing him.

The following cheques for December were drawn on the 29th of that month, on the signature of Sir E. Sabine:—

					£	s.	d.
For Office:							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					*18	3	4
J. S. Harding, sen.					†9	12	6
T. D. Bell					†6	5	0
C. W. Jacques, Rent for Quarter					133	13	0
For Observatories; Quarterly Allowances, &c.:							
D. Thomson, Aberdeen		‡61	5	0			
„ postages		1	10	8			
					62	15	8
T. R. Robinson, Armagh		40	14	0			
„ expenses for quarter		9	5	0			
					49	19	0
W. P. Dymond, Falmouth		‡65	12	6			
„ less waxed paper		6	10	4			
					59	2	2
R. Grant, Glasgow		‡61	5	0			
„ less rain gauge glass		0	5	6			
					60	19	6
H. Williams, Holyhead		-	-	-	2	15	3
S. Jeffery, Kew		62	10	0			
„ Examination of Records		100	0	0			
					162	10	0
C. Clouston, Orkney		-	-	-	2	18	9
S. J. Perry, Stonyhurst		‡48	18	1			
„ postage		0	12	0			
					49	10	1
T. Kerr, Valencia		58	13	10			
„ salary		20	16	8			
					79	10	6
J. Driscoll, rent at Valencia		-	-	-	25	0	0
G. T. Watson, Yarmouth		-	-	-	4	10	11
Bates, Elliot, & Co., Photo. Tray		-	-	-	1	18	9
Malby and Sons: printing, &c.		5	10	0			
„ „		1	5	0			
					6	15	0
F. G. Wagner, jun., diamond points		-	-	-	4	0	0
R. H. Curtis	Computations, &c.				11	13	4
F. C. Steventon					10	16	8
C. Stodart					†10	10	0
H. W. Woodward					†5	10	0
J. A. Curtis					†8	12	6
C. H. Thompson					†5	0	0
Carried forward					£858	15	3

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* Including allowance for extra attendance.

† Five weeks to the 27th.

‡ Deduction made for forms supplied.

		£	s.	d.
Brought forward		858	15	3
For Telegraphy; Quarterly Allowances, &c.:—				
N. J. Holmes, Shetland Co., June–July		5	13	9
C. Todd, Cambridge		3	19	1
J. Costello, Dover		3	5	9
J. Tilston, Holyhead		3	6	6
G. Mitchell, Kingstown		3	5	7
F. Gaster, London		3	5	0
W. D. Penny, Nairn		4	4	6
E. J. Lowe, Notts		3	18	0
J. Lucas, Oxford		3	6	0
J. Merrifield, Plymouth		3	5	0
W. Sandford, Portishead		3	19	0
J. Hoar, Portsmouth		3	6	0
W. Thomas, Scilly		4	4	11
W. Lawrence, Shetland		3	5	0
J. Smith, Stornoway		3	5	0
J. Trotter, Thurso		3	5	6
J. Sinclair, Wick		3	5	0
G. T. Watson, Yarmouth		3	6	3
C. Wakefield, York		3	5	10
F. Gaster	Computations, &c.	*15	17	5
W. L. Dallas		*†10	2	10
F. Brodie		*†7	19	8
R. Sargeant		*†5	12	0
For Ocean Meteorology:—				
H. Toynbee, Marine Superintendent		33	6	8
Cashiers of Bank of England (attendance to Bermuda anemometer)		11	17	6
E. Higgs, packing cases, &c.		12	6	6
P. Feathers, Dundee agent		3	5	0
H. J. Smart, Liverpool ,,		13	10	3
W. Salmon	Computations, &c.	20	16	8
R. Strachan		‡19	3	4
C. Harding		*14	12	9
W. G. James		†8	12	6
T. E. Allen		†8	12	6
J. W. McVeagh		†5	0	0
Office Expenses:—				
J. S. Harding, jun., on account		70	0	0
Total		£1,188	2	6

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* Including allowance for extra attendance.
† Five weeks to the 27th.
‡ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street*, *January* 12, 1874.

PRESENT:

Mr. Gassiot in the Chair.
Sir E. Sabine.

The Director was in attendance.

The Minutes of last meeting (January 5) were read and confirmed.

Reported—That the letter had been sent to Dr. Stewart as directed, and that its receipt had been acknowledged with thanks by that gentleman.

Mr. Scott stated, that in accordance with the Minute (p. 78) he had submitted the circular explanatory of the proposed change in the system of Storm Signals to the several foreign nations which are in receipt of telegraphic intelligence from the Meteorological Office, and had received letters of approval from all. He was, therefore, authorised to write to the Board of Trade as follows:

SIR,

I AM directed by the Meteorological Committee to inform you, for communication to the Board of Trade, that after six years' experience of the system of Telegraphic Weather Intelligence, adopted with the approval of the Board of Trade in 1867, the Committee are prepared to re-introduce the use of Admiral FitzRoy's signals (cones and drum) as to direction, though with a meaning slightly different from that possessed by the signals when formerly used, which meaning is more fully explained in the accompanying draft circular.

The signals proposed to be used are—

1. Cone.—Point downwards for Southerly gales.
2. Cone.—Point upwards for Northerly gales.
3. Drum, *with cone* to indicate the probable approach of a *very heavy gale*, from the direction indicated by the cone. The drum is not to be used without the cone.

The resumption of these storm-warning signals will be in accordance with the general wish expressed by the Congress at Vienna, and by the great majority of persons interested in the matter to whom communications have been addressed on the subject.

I may say that the proposed change of our system has been submitted to the officers charged with the Meteorological service in the respective countries which receive intelligence of storms from this Office, and has met with their entire approval. The countries in question are France, Holland, North Germany (including the port of Hamburg), Denmark, Norway, and Sweden.

I have therefore to request that you will be good enough to move the Board of Trade to sanction the resumption of the warning signals—which were temporarily discontinued in pursuance of their circular of 29 November 1866—and to cause a fresh circular, in lieu of that of 30 November 1867 (No. 278, M. 8542), to be printed, for issue to those places which now receive Telegraphic Weather Intelligence, or which may apply for the information in future.

I am, &c.
R. H. SCOTT,
Director.

Thomas Gray, Esq., Board of Trade.

Mr. Scott submitted a memorandum as to certain inaccuracies which he had discovered in the quarterly returns published by the Registrar General, which he was instructed to have printed for the consideration of the Committee.

Read—A letter from Captain Toynbee, submitting excellent logs by

Captain W. H. Smith, R.N.R., ss. "Peruvian," and ss. "Scandinavian" (Minutes 1872, p. 43).
„ A. Simpson, schooner "Traveller" (Minutes 1872, p. 92).

Mr. Scott was instructed to convey the marked thanks of the Committee to both of the gentlemen.

Submitted—The Quarterly Weather Report for 1872, Part IV.

The Committee then adjourned.

116, *Victoria Street, January* 19, 1874.

PRESENT:

Mr. De La Rue in the Chair.

Mr. Galton. | Major-General Strachey.
Sir E. Sabine.

The Director was in attendance.

The Minutes of last meeting (Jan. 12) were read and confirmed.

Reported—That the letter respecting Storm Signals had been sent to the Board of Trade, as directed.

Mr. Scott read the correspondence between himself and the Registrar-General with respect to inaccuracies which he had perceived in the Quarterly Returns of the Meteorology of England issued by the General Register Office.

Resolved—That the Committee, while approving of Mr. Scott's action in bringing these errors under the notice of the Registrar-General, do not deem it necessary to pursue the subject further for the present.

Read the following letters:—

(M.O. 183.)

SIR, Scottish Meteorological Society, Edinburgh, January 17, 1874.

I HAVE the honour to transmit herewith, for the information of the Meteorological Committee, a copy of a letter from the Marquis of Tweeddale, President of the Society, to Her Majesty's Treasury, dated 9th July 1873, and of the reply of the Treasury thereto, dated 4th August 1873.

I am, &c.
R. H. Scott, Esq. (Signed) THOMAS STEVENSON,
Hon. Sec.

(Copy.)
To the Secretary of the Treasury.

SIR, Scottish Meteorological Society, Edinburgh, July 9, 1873.

DURING the discussion on the Civil Service Estimates a few weeks ago in the House of Commons, in reference to the annual grant of 10,000*l.* to the Committee of the Royal Society of London for meteorological purposes, some remarks were made regarding the claim of the Scottish Meteorological Society for aid from the public funds.

You were pleased then on the part of Her Majesty's Government to acknowledge that these claims deserved attention, and to state that the Government were desirous that some aid should be given to that society, without, however, having a separate vote for Scotland.

I am requested by the Council of the Society to ask whether you would desire that the Society should make a specific request to you upon the subject of these claims, or whether it would be more convenient that Her Majesty's Government should take the initiative with the Committee of the Royal Society which has the administration of the vote of 10,000*l.* for meteorological purposes, in order to carry out the intentions then expressed. I need only refer you to the previous correspondence between the Scottish Meteorological Society and the Board of Trade, to show how valuable have been the statistical returns supplied by it periodically to a Government Department and how important have been the services which it has rendered, and continues to render, to Meteorological Science.

I am, &c.
(Signed) TWEEDDALE.

Copy. 10608.

MY LORD, Treasury Chambers, August 4, 1873.

I HAVE laid before the Lords Commissioners of Her Majesty's Treasury your letter of the 9th ultimo, calling attention to certain remarks recently made by me in the House of Commons with regard to the claims of the Scottish Meteorological Society for aid from the public funds, and I am desired by their Lordships to explain that those remarks were not intended to imply that this Board had in any way changed the views which it formerly held on this subject, and which were communicated by the Chancellor of the Exchequer to the deputation from the Society which waited on him in March 1869, but that they were merely meant as the expression of a hope that some arrangement might be made with the Royal Society which would secure for the Scottish Meteorological Society a participation in the Parliamentary grant as a recognition of the services rendered by it to the advancement of Meteorological Science.

It would certainly give my Lords much satisfaction to learn that some such arrangement had been made, but they do not feel that it lies with them to take the initiative in proposing it to the Royal Society, as they think that it is not desirable that they should interfere in any way with the discretion of that body as to the disposal of the annual grant.

I am, &c.
(Signed) W. E. Baxter.

The Marquis of Tweeddale, K.T.,
President of the Scottish Meteorological Society.

Mr. Scott was instructed to reply as follows :—

In reply to your letter of the 17th inst., enclosing copies of a correspondence between your Society and Her Majesty's Treasury (dated 9th July and 4th August 1873), which was laid before the Committee of this Office on the 19th inst., I am instructed by them to ask your Council to point out in what way they think that their organization could be brought into harmonious action with this Office so as to contribute to the direct advancement of the meteorology of the United Kingdom.

Should it meet the convenience of the Scottish Meteorological Society to delegate one of their body to confer with the Committee the Committee will be happy to make an appointment.

Read—The following Report :—

In further prosecution of my endeavours to test the velocity of wind registered by our anemometers, and to establish thereby a relation between wind velocity and the force as estimated by Beaufort's scale (Minutes 1870, pp. 25 and 40), I have the honour to submit to you a comparison between the velocity recorded at Falmouth, and the force observed at the Eddystone Lighthouse (distant about 30 miles from the Observatory), which I have extracted from the lightkeeper's register, kindly lent to me by the Elder Brethren of the Trinity House.

The comparisons are 4,674 in number, and extend from January 1, 1869 to December 31, 1872. The observations are made daily at 3 a.m., 6 a.m., 9 a.m., noon 3 p.m., 6 p.m., 9 p.m., and midnight, except during the year 1869, when only 4 observations per day were given, viz., 3 a.m. 9 a.m. 3 p.m., and 9 p.m.

The following table gives the average velocity in miles per hour, corresponding to the forces for which registrations have been obtained, without regard to the direction of the wind at the time.

Force.	No. of Observations.	Average Velocity.	Difference.
0 (calm)	55	6·5	1·0
1	383	7·5	2·7
2	695	10·2	3·4
3	1009	13·6	4·6
4	948	18·2	5·5
5	575	23·7	4·8
6	398	28·5	4·9
7	373	33·4	3·5
8	167	36·9	6·4
9	46	43·3	6·9
10	20	50·2	
11	4	54·8	
12	1	60·0	

The table on p. 7 gives the average velocity of wind in miles per hour, corresponding to each force in the Beaufort scale, the direction being referred to 16 points.

These figures show a considerable retardation of the velocity as recorded at Falmouth, when compared with the results from Holyhead and for Yarmouth (in easterly winds) (Minutes, *l. c.*). This amounts in some cases to as much as 10 °/o, as is especially noticeable in the higher forces.

The second table shows that there is not much difference between the values for the different points of the compass, as was so seriously the case at Yarmouth.

The results tend to show that we are as yet very far from obtaining a satisfactory comparison between the records afforded by various anemometers.

Robert H. Scott.

Read—A letter from Captain Toynbee submitting excellent Registers kept by—

Capt. John A. Martyn, s.s. "Java" (Minutes 1873, p. 46,) his 11th "excellent" log.
J. W. Newton, s.s. "Grenadier."
W. Watson, s.s. "Parthia" (Minutes 1873, p. 61).

Mr. Scott was instructed to present to Capts. Martyn and Newton the Wind and Current Charts, and to express to Capt. Watson the marked thanks of the Committee.

Direction of the Wind.	Average Velocity of Wind and Number of Comparisons. (Beaufort Scale Forces.)																										Direction of the Wind.
	0. (CALM.)		1.		2.		3.		4.		5.		6.		7.		8.		9.		10.		11.		12.		
	No. of Obs.	Average Velocity.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	Obs.	Vel.	
North -	2	8·0	41	7·3	51	9·5	67	12·1	63	18·0	46	20·8	22	26·9	7	29·7	2	39·0	—	—	—	—	—	—	—	—	North.
N.N.E. -	1	9·5	8	7·3	25	8·7	30	11·9	30	15·2	8	18·2	4	26·8	—	—	—	—	—	—	—	—	—	—	—	—	N.N.E.
N.E. - -	—	—	37	6·0	46	6·5	49	9·2	45	15·8	56	20·5	36	24·7	14	32·3	10	40·0	1	44·0	—	—	—	—	—	—	N.E.
E.N.E. -	1	5·5	10	5·3	39	8·4	52	11·7	52	15·6	41	22·3	42	28·4	29	32·2	12	34·6	2	43·0	—	—	—	—	—	—	E.N.E.
East - -	1	4·5	38	6·2	47	9·7	96	12·2	116	18·4	65	23·3	21	30·0	16	33·9	9	37·1	1	38·0	—	—	—	—	—	—	East.
E.S.E. -	5	5·4	16	7·4	40	8·5	49	12·7	26	16·0	9	28·1	14	29·2	4	33·3	2	33·0	—	—	—	—	—	—	—	—	E.S.E.
S.E. - -	9	6·1	40	6·5	47	10·1	29	13·4	34	19·4	27	26·1	14	32·4	12	40·5	3	42·0	—	—	—	—	—	—	—	—	S.E.
S.S.E. -	10	5·3	9	7·8	16	9·5	14	15·2	31	19·3	7	21·1	12	29·3	19	33·7	3	35·3	1	22·0	—	—	2	57·5	—	—	S.S.E.
South -	2	3·5	39	9·0	21	11·1	34	13·6	43	20·4	30	26·7	31	27·4	44	31·5	24	36·1	12	42·8	7	50·6	—	—	—	—	South.
S.S.W. -	2	6·0	8	6·6	26	9·8	36	15·1	55	18·6	27	25·4	25	29·3	36	32·3	23	34·5	4	43·3	2	47·0	1	49·0	—	—	S.S.W.
S.W. -	1	4·5	29	7·6	47	11·2	91	14·0	78	19·0	60	24·9	54	29·6	71	34·5	29	36·9	8	43·8	5	51·2	1	55·0	1	60·0	S.W.
W.S.W. -	4	5·4	19	8·9	49	10·7	94	14·3	103	18·2	49	22·1	46	27·4	55	30·7	16	33·2	6	43·8	5	51·6	—	—	—	—	W.S.W.
West -	1	2·0	35	9·3	84	12·4	102	14·8	61	18·1	56	23·4	30	29·3	27	36·0	16	37·4	5	40·6	1	42·0	—	—	—	—	West.
W.N.W. -	3	7·0	20	8·9	52	10·7	89	15·4	71	17·9	38	26·9	25	28·5	16	35·4	11	42·5	4	54·8	—	—	—	—	—	—	W.N.W.
N.W. -	7	8·1	23	8·2	66	10·1	101	15·2	80	19·2	33	26·4	13	30·2	16	36·1	2	39·0	2	41·0	—	—	—	—	—	—	N.W.
N.N.W. -	6	10·2	11	8·7	39	14·0	76	14·1	60	18·7	23	25·5	9	30·8	7	39·3	5	47·4	—	—	—	—	—	—	—	—	N.N.W.
North - (repeated.)	2	8·0	41	7·3	51	9·5	67	12·1	63	18·0	46	20·8	22	26·9	7	29·7	2	39·0	—	—	—	—	—	—	—	—	North (repeated).

N.B.—The values for North are repeated at the bottom of this table merely for the sake of more easy comparison with those for N.N.W.

SUBMITTED.—The following STATEMENT respecting the RECORDS for December 1873, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December, 1868).

——	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH:—	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
Action - - - - - -	Good.	Good	Good.	Good.	Fair.	Good.	Fair.	Fair.	Good.	Good.	Good.	Good.	Fair.	Good.
Records deficient, due to stoppage of clock -	None.	0	23	24	27	27	0	0	0	0	0	0	0	0
„ „ other causes -	0	0	0	0	0	0	15	0	0	0	0	0	0	0
Orientation verified - - - - -	—	—	31st	—	11th.	—	1st	—	18th.	—	Daily.	—	8th.	—
No. of errors discovered by subsidiaries -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
„ „ irregular differences	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements*:—														
Greatest difference - - - -	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign - -	0·1	0·5	0·1	0·4	0·1	0·3	0·1	0·5	0·0	0·1	0·1	0·2	0·1	0·4
Residual difference (—Kew) - - -	0·0	+0·2	0·0	0·0	0·0	0·0	+0·1	0·0	0·0	0·0	—0·1	—0·1	—0·1	0·0
RAIN GAUGE.														
Action - - - - - -	Good.		Good.		Good.		Fair.		Good.		Good.		Fair.	
Records deficient, due to stoppage of clock -	0		0		0		8		0		0		0	
„ „ other causes - -	43		0		24		0		0		0		0	
Errors in tabulation - - - - -	0		0		0		0		0		0		1	

BAROGRAPH :—							
Action	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography	Do.	Do.	Do.	Do.	Do.	Do.	do.
Records deficient, due to stoppage of clock	13	0	0	14	0	0	0
,, ,, failure of light	0	0	0	0	0	0	0
,, ,, other causes	0	0	0	0	0	0	0
No. of errors discovered—							
In entry of standard	0	1	0	2	0	1	1
,, calculating residual correction	0	2	0	0	0	0	0
,, applying residual correction	0	1	0	3	0	0	7
,, subtraction in subsidiary tables	0	0	0	0	0	0	0
,, tabulation by subsidiaries	0	0	0	0	0	0	0
,, irregular differences	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—							
Greatest difference	·0040	·0040	·0040	·0050	·0040	·0040	·0050
Mean difference irrespective of sign	·0019	·0015	·0016	·0022	·0013	·0016	·0023
Residual difference (— Kew)	—·0010	+·0007	—·0003	—·0004	+·0004	+·0002	—·0015
Mean monthly difference between simultaneous barograph and barometer readings	·0022	·0024	·0018	·0020	·0023	·0015	·0022

THERMOGRAPH :—														
Action	*		*		*		Fair.		*		Good.		*	
Photography							Good.				do.			
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock							9	9			0	0		
,, ,, failure of light							0	0			0	0		
,, ,, imperfectly moistened bulbs							—	4			—	0		
,, ,, partially frozen							—	4			—	3		
,, ,, other causes							6	0			0	0		
No. of errors discovered in entry of standard							0	0			0	0		
,, ,, by subsidiary measurements							1	0			0	0		
,, ,, by subtraction in do. tables							0	0			0	0		
,, ,, detected under glass scale							1	1			0	0		
Result of 40 *Remeasurements* :—														
Greatest difference							0·20	0·20			0·20	0·20		
Mean difference irrespective of sign							0·08	0·06			0·08	0·08		
Residual difference (—Kew)							+0·02	+0·03			+0·03	—0·07		
Mean monthly difference between simultaneous thermograph and thermometer readings							0·10	0·06			0·13	0·17		
No. of errors in maxima and minima							2	4						

* Examination of the Records not completed; delayed to bring up Falmouth arrears.

Mr. Scott requested instructions as to the memorandum of the immediate probabilities of the weather which had been issued privately to the Committee since the 25th of November (Minutes 1873, p. 73). He was instructed to publish them in the newspapers occasionally.

Submitted—The following statement of accounts paid and liabilities to 31st December 1873:

——	Paid.			Estimated Liabilities.		
Office :—	£	s.	d.	£	s.	d.
Salaries - - -	958	6	9	—		
Rent, fuel, &c. - -	473	9	0	3	0	0
Contingencies - -	119	5	8	7	0	0
Land Meteorology :—						
Expenses at observatories -	2,106	9	3	66	0	0
New instruments for ditto -	—			—		
Computations - - -	604	2	11	—		
Telegraphy - - -	846	3	9	702	0	0
Inspections, &c. - -	383	13	5	219	0	0
Computations - -	383	4	10	—		
Ocean Meteorology :—						
Marine Superintendent -	300	0	0	—		
Instruments, Admiralty -	300	8	4	57	0	0
Ditto Mercantile Marine -	254	14	10	125	0	0
Computations and care of instruments - -	782	8	3	—		
Totals - -	7,512	7	0	1,179	0	0

Grand total - - £8,691 7*s.* 0*d.*

Robert H. Scott.

The Committee then adjourned.

116, *Victoria Street*, *January* 26, 1874.

PRESENT:
Sir E. Sabine in the Chair.
Mr. De La Rue.

The Director was in attendance.

The Minutes of last meeting (January 19) were read and confirmed.

Read—The following letter:—

M.O. 243.
M. 801.

SIR, Board of Trade, January 24, 1874.

IN reply to your letter of the 13th inst., relative to the reintroduction of the use of the late Admiral FitzRoy's signals—cones and drum—at the stations to which telegraphic weather intelligence is forwarded from your Office, I am directed by the Board of Trade to state, for the information of the Meteorological Committee, that the Board approve of the plan and of the new circular relating thereto, and I am to forward for the observations of the Committee the draft of the revised circular proposed to be issued by this Department on the subject, and at the same time I am to return you the draft circular enclosed in your letter.

I am, &c.
R. H. Scott, Esq. (Signed) THOMAS GRAY.

Mr. Scott stated that he would revise the proposed circular as requested by the Board of Trade.

Reported—That the letter had been sent to the Scottish Meteorological Society as directed.

Mr. Scott reported that he was making arrangements for the publication of "Probabilities" in the newspapers as directed at last meeting.

Read—A letter from Capt. H. Toynbee, submitting an "excellent" log by Capt. C. W. Pearson, s.s. "Strathclyde" (Minutes 1873, p. 61). Sp Lr sent 30 Jany

Reported—That Mr. H. Woodward had resigned his situation in the Office.

Submitted—The following statement of the examination of the thermograph records for Falmouth for the months April—June, 1873, which had been omitted in the returns; pp. 35, 45, and 49, Minutes 1873.

——	April.		May.		June.	
THERMOGRAPH :—						
Action - - - - - - -	Good.		Good.		Good.	
Photography - - - - -	Do.		Do.		Do.	
Records deficient - - - -	*39 hrs. dry bulb. †24 hrs. wet bulb.		1 hr. wet bulb out of action.		None.	
Result of 40 *Remeasurements* :—	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Greatest difference - - - -	0·20	0·20	0·20	0·20	0·20	0·20
Mean difference irrespective of sign - -	0·06	0·08	0·05	0·05	0·06	0·06
Residual difference (— Kew) - - - -	—0·01	—0·06	—0·02	—0·02	+0·01	—0·01
Mean monthly difference between simultaneous thermograph and thermometer - -	0·10	0·11	0·09	0·09	0·09	0·10
No. of errors discovered in entry of standard -	0	1	0	0	0	0
„ discovered under grass scale - -	4	4	2	0	1	0
„ „ „ inspection - -	0	0	0	1	0	0
„ in maximum and minimum - - -	0	0	0	0	0	0
Subtraction in subsidiary tables - -	0	0	0	0	0	0

* Through breakage of thermograph dry bulb. † Instrument dismounted.

Submitted—The Quarterly Weather Report for 1873, Part I.

The following cheques for January were drawn:—

					£	s.	d.
For Office:							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					*17	13	4
J. S. Harding, sen.					†7	14	0
T. D. Bell					†5	0	0
C. Gilman, Gas Co.					4	7	1
E. Higgs, repairs in office					17	13	9
Cole and Leigh, coals					7	10	0
J. Merren, repairs in office					2	10	8
Williams and Norgate, books					5	11	7
For Observatories:							
T. Kerr, Valencia, salary					20	16	8
R. H. Curtis	Computations, &c.				11	13	4
F. C. Steventon					10	16	8
C. Stodart					†8	8	0
H. W. Woodward					†4	8	0
J. A. Curtis					†6	18	0
C. H. Thompson					†4	0	0
For Telegraphy:							
S. M. Clare, Submarine Co., October to December					3	13	0
N. J. Holmes, Scilly Co., November to December					5	18	0
V. Brooks, Day, & Son, Delivery of Daily Weather Charts					11	15	11
F. Gaster	Computations, &c.				*16	0	11
W. L. Dallas					*†7	17	6
F. Brodie					*†6	2	0
R. Sargeant					*†4	12	0
For Ocean Meteorology:							
H. Toynbee, Marine Superintendent					33	6	8
W. T. Black, rain gauge					1	16	0
P. Adie "A." instruments		13	19	6			
,, "M.O." ,,		25	11	0			
					39	10	6
J. R. Jones, Aberdeen Agent					7	18	5
R. Riviere, Binding Wind Charts					7	4	0
W. Salmon	Computations, &c.				20	16	8
R. Strachan					‡19	3	4
C. Harding					*14	3	3
W. G. James					†6	18	0
T. E. Allen					†6	18	0
J. W. McVeagh					†4	0	0
For Office Expenses:—							
J. S. Harding, jun., on account					90	0	0
Total					£509	8	7

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* Including allowance for extra attendance.
† Four weeks to the 24th.
‡ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, February* 2, 1874.

PRESENT:

Sir E. Sabine in the Chair.

Mr. De La Rue.
Mr. Galton.
Major-General Smythe.
Major-General Strachey.

The Director was in attendance.

The Minutes of last meeting (January 26) were read and confirmed.

Read—The following memorandum:—

GENTLEMEN,

I HAVE the honour to inform you that the subject of Maritime Meteorology was brought under discussion at the recent Meteorological Congress of Vienna.

The question:—"In how far can Maritime Meteorology be best introduced into the system of General Meteorology" was referred to a sub-committee, who presented a report thereon, concluding with a suggestion that a Maritime Meteorological Conference should be convened.

The Congress entrusted the task of making preparations for summoning such a Conference to the Permanent Committee, to which body I have the honour of belonging.

The Permanent Committee held a meeting on the 16th of September, and referred this matter to a sub-committee consisting of five members, Messrs. Buys Ballot (Holland), Mohn (Norway), Mouchez (France), Neumayer (North Germany), and myself, and I have been requested to act as secretary of this sub-committee.

My first duty is to prepare a series of questions on which a programme for discussion might possibly be based, and to submit them to my colleagues for their consideration.

My second is to ascertain from you whether or not you would be disposed to sanction the issue by me of invitations for such a Conference, to be held in London in the course of next summer.

It is proposed that the Conference should be of a private nature, like that of Leipzig, in 1872, and should not be conducted under the authority of the respective Governments, as its action is to be deliberative, and not in any way executive.

In accordance herewith I submit to you the following draft of a series of subjects for discussion, and would venture to ask for your opinion thereon, and for a decision from you on the second point to which I have drawn your attention.

ROBERT H. SCOTT.

PROPOSED DRAFT, to serve as a BASIS for the preparation of a PROGRAMME for a MARITIME CONFERENCE.

In the case of a nation which sent any representative to the Brussels Conference in 1853, a circular should be addressed to the chief of the Office for Maritime Meteorology, if such exist, or to the chief of the meteorological organization of the country, requesting them to state:

1. To what extent the resolutions adopted at Brussels have been carried out in his country?
2. What have been the grounds for departure from them, if such departure has taken place?

The chief points of view from which the subject might be considered may, in my opinion, be stated as follows:

I. OBSERVATIONS.—The nature and amount of the observations required:

7. Currents, direction.
8. „ rate.
9. Magnetic variation observed.
10. Winds, direction.
11. „ force.
12 and 13. Barometer.
14. Thermometer, dry bulb.
15. „ wet bulb.
16. Forms and directions of clouds.
17. Proportion of sky clear.
18. Hours of rain, &c.
19. State of the sea.
20. Water, temperature at surface.
21. „ specific gravity.
22. „ temperature at depths.
23. State of the weather.
24. Remarks.

N.B. The numbers refer to the columns of the *Abstract Log* of the Brussels Conference.

II. Instruments.—The instruments to be employed for any observations which require them.

III. Observers.—The control to be exercised over the observers as to their instruments and registers.

IV. Discussion.—The method of discussion of the observations.

V. Synchronous Charts.—In how far are Maritime Meteorological observations to be made with the view of their being used for the preparation of Synchronous Charts?

VI. Subjects of Inquiry.— In how far can the subdivision of objects of inquiry be carried out in a spirit of fairness to the collecting and discussing establishments respectively.

VII. Sailing Directions.—In how far are purely practical investigations, such as the preparation of Sailing Directions, admissible for a scientific institution.

Mr. Scott was instructed to send his draft to the four gentlemen named in the memorandum, for their suggestions, and to inform them that it is in contemplation to arrange that the Conference should take place in England.

Read—The following letter:—

M. O. 289.

Scottish Meteorological Society, Edinburgh,
January 30, 1874.

Sir,

I have the honour to acknowledge receipt of your letter of 20th inst., in reference to my letter of the 17th inst., enclosing copies of documents which I was instructed by the Council to send to you for the information of the Meteorological Committee.

I am now directed to forward to you copy of a Memorial to the Treasury which shows the action which has already been taken by the Council.

It will be seen from this Memorial that the Council have applied to the Treasury for a grant to be administered through the Royal Society of Edinburgh. The Council did not—after the answers which they had on various occasions received from the Meteorological Committee, to the effect that their grant was wholly absorbed in the prosecution of their own special objects—deem it advisable to apply again to your Committee.

If, however, any plan consistent with the independent action of the Society has suggested itself to the Committee, the Council will be happy to give it their best consideration.

I have further to add that it will, at all times, afford the Council much satisfaction to co-operate with the Committee in any way in their power in the prosecution of British Meteorology.

I have, &c.
(Signed) Thomas Stevenson,
Hon. Sec.

R. H. Scott, Esq.

Copy.

M. O. 289.

Memorial to the Lords Commissioners of Her Majesty's Treasury relative to a Grant from Government to the Scottish Meteorological Society.

1. Attention drawn in the House of Commons to the Society's claim.

During the last session of Parliament when Mr. Baxter, your Lordships' secretary, moved in the House of Commons for a renewal of the grant of 10,000*l.* for meteorological purposes, several Scotch members called attention to the claims of the Scottish Meteorological Society for assistance from the public funds.

2. Reply of the Treasury thereto.

Mr. Baxter stated that the Government were desirous that the Society should have such assistance, and suggested that this might be obtained out of the grant of 10,000*l.* without its being necessary to move a separate vote.

3. This reply regarded as satisfactory.

These declarations by Mr. Baxter being considered satisfactory, the motion for a renewal of the grant for 10,000*l.* was agreed to by a unanimous vote of the House.

4. Action of the Society thereupon.

On 9th July 1873 your Memorialists, adverting to what had passed in the House of Commons, addressed a letter to your Lordships asking:—

(*a.*) Whether they desired that the Society should make a specific request to them regarding its claim for assistance, or

(*b.*) Whether it would be more convenient that Her Majesty's Government should take the initiative in applying to the Royal Society Committee for a share of their grant of 10,000*l.*

5. Reply of the Treasury.

In answer to this inquiry Mr. Baxter wrote on the 4th August renewing "the expression of a "hope that some arrangement might be made with the Royal Society, which would secure for the "Scottish Meteorological Society a participation in the Parliamentary Grant, as a recognition of the "services rendered by it to the advancement of Meteorological Science;" and adding that "it would "certainly give my Lords much satisfaction to learn that some such arrangement had been made, "but they do not feel that it lies with them to take the initiative in proposing it to the Royal Society, "as they think that it is not desirable that they should interfere in any way with the discretion of "that body as to the disposal of the annual grant."

6. The Council have already several times applied to the Meteorological Committee, without success.

The Council have already on several occasions applied to the Royal Society Committee for a share of the grant, in accordance with suggestions made both by your Lordships and by the Board of Trade, but these applications the Committee have uniformly refused, stating that they were unable to spare any portion of the grant.

But as my Lords have again, and in a more public manner, expressed a desire that the Scottish Society should participate in the grant voted for meteorological purposes, and have also expressed an opinion that it does not lie with my Lords to take the initiative in applying to the Royal Society Committee, the Council have deemed it right to send to the Committee, for their information, a copy of the Marquis of Tweeddale's letter to the Treasury, dated 9th July 1873, and of Mr. Baxter's reply thereto, dated 4th August 1873.

7. The Council nevertheless have sent copies of the correspondence to the Meteorological Committee.

The Council venture to express a hope that in the circumstances now stated, my Lords may deem it right to adopt the alternative referred to by Mr. Baxter in the House of Commons when he said that "The Government were extremely averse to multiply votes of this kind, and that they "were very desirous that the English Society should arrange some mode of procedure by which the "Scotch Society could have some assistance out of the vote, *without its being necessary for the Govern- "ment to move any separate vote for Scotland.*"

8. Proposal to adopt the alternative.

This expression of opinion, that whilst Her Majesty's Government were averse to move any separate vote for Scotland, it might nevertheless be eventually necessary to do so, was, no doubt, considered satisfactory by the members who had drawn the attention of the House to the claims of the Scottish Society, as an indication that in one way or other a grant would be given.

9. Which alternative had been deemed satisfactory by the Members of Parliament, who had drawn attention to the Society's claims.

It may perhaps be desirable to remind my Lords that they assisted this Society shortly after its establishment. This assistance was, however, only to a small extent, viz.:—

A gift of 12 sets of Meteorological Standard Instruments; the use of the types of the Registrar-General's Quarterly Meteorological Tables; and rooms for the Society's office in the Post Office buildings, for which, however, a rent is paid by the Society.

10. Assistance hitherto received from Her Majesty's Government.

The Society has the greatest difficulty in carrying on its operations by reason of its small income, which is derived entirely from the subscriptions of its 560 members.

11. Society's income is small and inadequate.

The Society does work which is of a national character, as evidenced by Her Majesty's Government nominating their secretary, Mr. Buchan, as a delegate to represent the British Government at the Meteorological Congress held at Vienna in September last. The Society's work is further widely appreciated, and my Lords, on account of the service thereby rendered to Meteorological Science, have acknowledged the Society's claim for a grant. The Society's claim is greatly strengthened when regard is had to the fact that a public department of the Government has obtained for the past 18 years valuable information from your Memorialists.

12. Grounds of Society's claim for a grant.

For want of funds the Society is unable to publish the monthly averages from about 50 of their 150 stations; to publish, as is done in other countries, and as the Council have repeatedly been asked to publish, daily observations from a selected number of their stations; to prosecute research on various important subjects connected with Meteorology; to publish many papers of great value which are in the possession of the Council; to meet the expenses required for an adequate inspection of the Society's stations; to give assistance to their Secretary, and otherwise place the staff of the Office on a satisfactory footing.

13. Effect on Society's operations from want of funds.

Your Memorialists think~~s~~ it right to allude to what was said in the House of Commons regarding the large amount of the grant, and to express their hearty concurrence with the remark made on that occasion by Dr. Lyon Playfair, viz., that the grant voted for meteorological purposes is not too large. In some other countries the sums annually voted for meteorological purposes are far larger than in this country. Thus in the United States of America the amount voted by Congress for Meteorology exceeds 50,000*l.* yearly.

14. Aid given to Meteorology by other Governments.

If my Lords deem it desirable to have a guarantee for the proper application of the grant, your Memorialists would venture very respectfully to suggest that the grant be made to the Scottish Meteorological Society, for meteorological purposes, to be administered through the Royal Society of Edinburgh, or through representatives at the Council Board of the Society nominated by your Lordships as your Lordships may resolve on. If your Lordships entertain favourably the view of superintendence by the Royal Society of Edinburgh, an increase of the annual vote to that Society, with this specific destination, might prevent that multiplication of votes to which your Lordships objected.

15. Administration of the grant.

May it therefore please your Lordships in consideration of the claim of your Memorialists to assistance from the public funds to recommend to the House of Commons that an annual grant of 500*l.* be voted to the Scottish Meteorological Society.

(Signed) TWEEDDALE,
President Meteorological Society of Scotland.

Resolved—That the Scottish Meteorological Society be thanked for their courtesy in informing the Meteorological Committee of the steps that had been taken in reference to their application to the Treasury for a grant in aid, and that the Council of the Scottish Meteorological Society be informed that they are quite correct in stating that the grant to the Meteorological Committee is quite absorbed in carrying out the work of the Committee.

Mr. Scott submitted a draft for utilizing the operations of the Meteorological Societies in connexion with the Office—Consideration postponed.

Read—The following letter:—

M.O. 290.

War Department, Washington, D.C.,

Sir,

January 20, 1874.

At the recent Meteorological Congress at Vienna a proposition was adopted to the effect that it is desirable that, with a view to their exchange at least one uniform observation of such character as to be suitable for the preparation of synoptic charts be taken and recorded daily and simultaneously at as many stations as practicable throughout the world.

The United States has an especial interest in reports and exchanges of this character, for the uses of the particular work in which it is engaged. It is hoped that when they are sufficiently extended satisfactory solution of many questions from time to time presenting themselves to this Office, and which now cannot be answered, will be arrived at.

I have the honour, therefore, to request the establishment of a regular exchange between the Meteorological Office of which you are Director, and the Office of the Chief Signal Officer at Washington, of uniform reports made from simultaneous observations taken daily at as many of the stations under your charge as it may be practicable for you to instruct or request to furnish such reports, or from other stations from which they may be voluntarily tendered, and of similar reports to be taken at the established stations of this Office throughout the United States. The reports to embrace, at least, pressure (reduced), temperature, wind, rain, relative humidity, and clouds, and to be made at 12.43 p.m., Greenwich mean time. The records to be printed or in manuscript, as you prefer, and to be mailed (as many of them as may be ready for exchange on the dates) in packages, on the 15th and last days of each month. (In this connexion I have the honour to refer to my telegram of date November 1st, 1873.) Should circumstances render it inconvenient for your Office to furnish such reports without blanks for days on which they will necessarily fail to be taken, the records will be none the less gratefully received. Self-registered records will be very acceptable. In return exchange it is proposed to mail to your Office on the 15th and last days of each month the record of the simultaneous report prepared for that purpose in the form of which the enclosure herewith is a specimen for a single day.

The data so to be exchanged are intended for any use either Office may wish to make of them.

As an acknowledgment to those who may, upon your invitation, assist in a work so much wished for on the part of this Office, it is proposed to send to you monthly copies of the "Official Monthly Weather Review," with its Maps, for distribution to each of those so assisting, or other papers published by this Office, if so requested.

In requesting this exchange as a part of a system to which it is hoped a very wide extension can be given, the Chief Signal Officer recurs with pleasure to the prompt encouragement received at your hands at the earlier steps for its adoption, and is gratified to announce that co-operation for similar exchanges of records, commencing on 1st January 1874, has been requested or is in progress with Professor H. Wild, Director Imperial Observatory, St. Petersburg; Professor A. Coumbary, Director Imperial Observatory, Constantinople, Turkey; Professor Carl Jelinek, Director Imperial Observatory, Vienna, Austria; Professor Quetelet, Director Meteorological Observatory, Brussels, Belgium; Professor Buys Ballot, Director Meteorological Institute of the Netherlands, Utrecht, Holland; and Professor H. Mohn, Director Meteorological Institute of Norway, Christiania, Norway. As time and its facilities will permit, this Office will seek additional aid. The advantages to accrue to the service in the United States are certain, and the hope is not unfounded that as the co-operation sought will be world-wide, so also will be the benefits resulting.

I am, &c.

(Signed) Albert J. Myer.

Brigadier-General, U.S.A.

R. H. Scott, Esq.

Reported—That the glass rod which carries the screen for temperature compensation of the Barograph at Valencia had been broken by accident, and that a new rod had been sent down.

The Committee then adjourned.

116, *Victoria Street, February* 16, 1874.

PRESENT:

Sir C. Wheatstone in the Chair.

Mr. De La Rue.	Major-General Smythe.
Sir E. Sabine.	Major-General Strachey.

The Director was in attendance.

The Minutes of last meeting (February 2) were read and confirmed.

Read—The following letter:—

H. 724.
M.O. 280.

Board of Trade (Harbour Department),
January 29, 1874.

SIR,

IN reply to your letter of the 27th instant,* inquiring whether steps have been taken in order to secure the co-operation of the three general lighthouse authorities with the Meteorological Office, in collecting sea temperature observations, in connexion with the migration of food-producing fish, I am directed by the Board of Trade to forward copies of the replies which have been received on the subject from the Corporation of Trinity House and the Commissioners of Irish Lights.

The Commissioners of Irish Lights have not yet furnished any sufficiently definite information for transmission to you, but a further letter has this day been addressed to them on the subject.

It was the intention of the Board of Trade to postpone communicating with you until the definite replies of all the general lighthouse authorities could be sent to you.

I am, &c.
(Signed) E. CECIL TREVOR.

R. H. Scott, Esq.

H. 3776.

Trinity House, London,
July 17, 1873.

SIR,

I AM directed to acknowledge the receipt of your letter dated 10th instant (H. 3620), with enclosures from the Meteorological Department, relating to the importance of obtaining information with regard to the migrations of food-producing fish, and inquiring whether thermometrical observations can be made from lighthouse, &c. stations for that purpose, and in reply I am to acquaint you that at shore stations the keepers have no boats and are often at some distance from the shore, and that at rock stations such as the Eddystone, Wolf, &c., observations made at high water in too close contiguity to previously heated rocks, or affected by other local cause, would probably be misleading; but as respects light-vessels it appears to the Elder Brethren that observations therefrom may be of considerable service, and they will have great pleasure in causing them to be made.

I enclose a list of the light-vessels in order that those may be selected which, on consideration, shall appear to be most desirable as recording stations.

I am, &c.
(Signed) ROBIN ALLEN.

The Assistant Secretary,
Harbour Department, Board of Trade.

[List not printed here.]

H. 4010.

Irish Lights Office, Westmoreland Street, Dublin,
August 2, 1873.

SIR,

WITH reference to your letter of the 10th ultimo (H. 3625) relative to certain returns in connexion with the migrations of food-producing fish being furnished by the light-keepers and seamen in the service of the Commissioners of Irish Lights to the Meteorological Department, I am directed to acquaint you for the information of the Board of Trade that the Commissioners see no reason why light-keepers, &c. should not make the observations required, provided that proper instructions and forms are sent by the Meteorological Department, and that it will in no way interfere with their duties.

I am, &c.
(Signed) W. LEES,
Secretary.

The Assistant Secretary,
Harbour Department, Board of Trade.

H. 1006.
M.O. 355.

Board of Trade (Harbour Department),
February 10, 1874.

SIR,

WITH further reference to your letter of the 27th ultimo. I am directed by the Board of Trade to forward copy of a communication which has been received from the Commissioners of Irish Lights on the subject.

I am, &c.
(Signed) C. CECIL TREVOR.

R. H. Scott, Esq.

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* Letter inquiring whether any action had been taken by the Board of Trade since June 1873.

Irish Lights Office, Westmoreland Street, Dublin,
February 9, 1874.

SIR,

WITH reference to your letters of the 9th August 1873 (H. 4010), and 29th January last (H. 724), on the subject of the migration of food-producing fish, and requesting to be furnished with a list of the lighthouse stations within the jurisdiction of this Board, at which, in their opinion, the most valuable observations are likely to be taken, I annex the list as requested.

I am, &c.
(Signed) W. LEES.

Assistant Secretary, Harbour Department,
Board of Trade.

[List not printed here.]

Mr. Scott stated that he had written to the Board of Trade drawing Mr. Trevor's attention to the fact that the Commissioners of Northern Lights had not specified the stations under their management at which observations could be taken. As soon as he should receive a reply he would submit to the Committee a definite proposal on the entire subject.

He further reported that he had received a visit from Dr. H. A. Meyer on behalf of the "Commission for the Examination of the German Seas" at Kiel, who had consulted him as to the possibility of having observations of sea temperature and specific gravity taken on the east coast of England, and that he had requested Dr. Meyer to put his proposal in writing.

Read—The following letters :—

M. 2117.
M.O. 349.

Board of Trade,
February 9, 1874.

SIR,

I AM directed by the Board of Trade to transmit to you the enclosed copy of a letter from the President of the Meteorological Society of London, and I am to request you to be good enough to lay it before the Meteorological Committee for any observations they may be pleased to make on it.

I am, &c.
(Signed) THOMAS GRAY.

R. H. Scott, Esq.

5 Kingsdown Villas, Wandsworth Common,
February 4, 1874.

SIR,

I HAVE been requested to state, for the information of Her Majesty's Board of Trade, that the Meteorological Society of London has recently had present in the deliberations of its Council the consideration of the great desirability of so directing an increased activity that has recently been coming into its proceedings as to co-operate most effectually and loyally with the practical and useful work of the Meteorological Office of the Government.

The Meteorological Society has for some time felt very strongly how important it is to produce such an organization in this direction as may best secure economy and improved efficiency in labours that are, although of independent source, of necessity, directed to one common end. The Society has now, after nearly a quarter of a century of more or less sustained activity, an assured incorporated existence, with an association of more than 300 Fellows, who are almost exclusively men working assiduously in their science. I shall have occasion to submit this fact to your Department within a few days in the form of the anniversary address of the President of the Society, and I expect to have also in connexion with this address, as soon as some pending deliberations of the Council have been matured, to place in your hands a definite proposal on the part of the Society to be allowed to assume the position of authorized support of the general proceedings of the Meteorological Office, with such mutual assistance and inter-dependence on either hand as further consideration of the subject may show to be advisable and possible.

I am, &c.
(Signed) ROBERT JAMES MANN, M.D., &c.
President of the Meteorological Society.

T. Gray, Esq.

Mr. Scott was directed to prepare a reply for the consideration of the Committee.

Submitted—The following letter :—

CHANGEMENT DU SYSTÈME DES SIGNAUX DE TEMPÊTES.

M.O. 307.

Ministère de la Marine et des Colonies,
Paris, le 31 Janvier 1874.

MONSIEUR,

PAR une lettre en date du 28 Janvier dernier, vous annonciez à Mr. le Capitaine de Frégate, chargé du service Météorologique au Ministère de la Marine, que le Comité du Meteorological Office a résolu de reprendre les signaux de tempêtes de l'Amiral FitzRoy, le Cone et le Cylindre, en y faisant quelques légères modifications.

Vous disiez, en outre, que le Board of Trade avait approuvé cette résolution, et que vous nous informeriez du jour où ces nouveaux signaux commenceraient à être mis en pratique.

Enfin vous priiez, au nom du Comité, Mr. Rivière de demander mon approbation pour ces changements.

Notre marine marchande et nos populations maritimes des littorals Nord et Ouest, se sont trop bien trouvées de vos avertissements, pour que je ne saisisse pas avec empressement, Monsieur, cette occasion de vous offrir tous mes remerciements et ceux de la Marine Française pour les services que vous nous avez rendus et que vous rendez journellement, ainsi que pour l'obligeance avec laquelle vous vous êtes prêté à nos nécessités.

Je compte donc donner des ordres à tous les Préfets Maritimes, afin que des instructions dans ce sens soient envoyées aux sémaphores, et que les moyens nécessaires leur soient fournis pour les signaux de nuit; et je vais m'entendre avec mon collègue, Mr. le Ministre des Travaux Publics, afin que des ordres semblables soient donnés pour les ports de commerce.

Vous faciliteriez beaucoup nos démarches si vous pouviez nous envoyer encore un certain nombre de copies du Telegraphic Weather Intelligence.

Recevez, &c.
LE VICE-AMIRAL
Ministre de la Marine et des Colonies D'HORNOY.

Monsieur Robert Scott,
Directeur du Meteorological Office.

Mr. Scott submitted the following reply which he had sent to General Myer in answer to his letter (Minutes, February 2):—

Meteorological Office, London,
February 14, 1874.

DEAR SIR,

BY this mail I forward the returns which I have received for the first two fortnights. The plan has been received with more favour than I had even hoped. The whole of the observers, except those at our seven observatories, are volunteers, as it is not possible for us, at the limited scale of remuneration we can allow to our telegraphic reporters, to impose fresh *duties* on them.

I consider, however, that the number of stations which have been announced are amply sufficient for the comparatively small area of these islands.

I do not know that I can feel confident that all will continue to observe. This is our great difficulty with volunteers.

I have named 0h. 45m. as the epoch, to get an even quarter of an hour. It is not possible to ensure accuracy within a few minutes. At some of our stations the thermometers are a quarter or half a mile from the barometers, so that the two observations cannot possibly be simultaneous.

As to your very kind offer to supply your monthly summaries and charts in return, I hardly know what to say. It would be of no use to offer them to at least one third, if not more, of the observers: they would be simply thrown away. I should propose that you should send 25 copies at first, and I could then let you know how many were really required.

It is only practical experience which will teach how the plan will work for a permanency.

Yours, &c.
(Signed) ROBERT H. SCOTT,
Director.

Brigr.-Gen. A. J. Myer.

Mr. Scott reported that he had sent off the reports for two first fortnights; 61 observers had sent in returns for the former, and 64 for the latter period.

Reported—That Admiral Richards had resigned the post of Hydrographer to the Admiralty, and that Captain Evans had been appointed thereto.

Mr. Scott was directed to send the following letter to the Royal Society:—

SIR,

I AM instructed by the Meteorological Committee to inform you that owing to his resignation of the post of Hydrographer to the Admiralty, Rear-Admiral G. H. Richards has ceased to remain a member of their body, on which he was placed by the letter of the Royal Society to the Board of Trade, dated December 15, 1866.

I am therefore to request that the President and Council will be pleased to notify to the Committee their decision as to the appointment of the present Hydrographer as a member of the Committee, and furthermore that they will replace Admiral Richards on the Committee as an additional member, as the Committee are most anxious to retain the benefit of his valued experience.

Submitted—The following result (see pp. 20, 21) of a comparison between the daily and five-day means of temperature at Kew as obtained by tabulation of hourly values and calculation, and those obtained by the planimeter measurements of the photographic thermograms and of the published plates (Minutes, p. 1).

Mr. Scott was instructed to submit this result to the Royal Society in the form of a paper.

Mr. Scott reported that he had appointed Mr. H. N. Cobley as a temporary clerk at the salary of 1*l*. a week, in place of Mr. Woodward (Minutes, p. 11), and also that he had raised the weekly wages of the messenger, H. Chivers, 2*s*. per week, making them 12*s*. per week, and had made him a temporary clerk.—Approved.

Reported—That it had been found advisable to substitute Hurst Castle as a telegraphic reporting station for Portsmouth (p. 2), and that arrangements were now being made to train the telegraphic clerk in the duties of reporting.

Reported—That the Daily Weather Charts had been supplied to St. Mary's College, Oscott, in exchange for publications.

Resolved—That the sum of 1,000*l*. be transferred from the deposit account of the Committee to their current account.

Date.	First Day.			Second Day.			Third Day.		
Groups of Five Days.	Tabulations.	Planimeter.	Difference.	Tabulations.	Planimeter.	Difference.	Tabulations.	Planimeter.	Difference.
1872.									
April - 1– 5	50·2	50·4	+·2	47·1	47·6	+·5	41·3	41·7	+·4
„ - 6–10	43·2	43·5	+·3	47·3	47·5	+·2	52·3	52·5	+·2
„ - 11–15	53·3	53·2	−·1	56·1	56·4	+·3	51·1	51·4	+·3
„ - 16–20	49·7	50·0	+·3	45·7	46·0	+·3	42·7	43·0	+·3
„ - 21–25	43·5	43·5	0	47·4	47·7	+·3	49·4	49·2	−·2
„ - 26–30	53·3	53·6	+·3	57·5	57·6	+·1	51·6	52·0	+·4
May - 1– 5	53·2	52·9	−·3	56·2	56·3	+·1	54·8	55·2	+·4
„ - 6–10	47·9	48·3	+·4	50·4	50·8	+·4	47·3	47·8	+·5
„ - 11–15	41·0	41·0	0	45·2	45·3	+·1	47·6	47·7	+·1
„ - 16–20	53·6	53·6	0	48·9	49·2	+·3	42·0	42·3	+·3
„ - 21–25	50·1	50·2	+·1	49·1	49·4	+·3	50·0	50·1	+·1
„ - 26–30	56·1	56·0	−·1	61·3	60·8	−·5	61·1	61·3	+·2
May–June - 31– 4	53·0	53·4	+·4	53·4	53·2	−·2	53·4	53·6	+·2
„ - 5– 9	56·2	56·3	+·1	54·5	55·1	+·6	50·8	50·8	0
„ - 10–14	54·4	54·7	+·3	54·6	54·5	−·1	56·7	56·8	+·1
„ - 15–19	64·7	64·9	+·2	68·7	68·7	0	71·4	71·1	−·3
„ - 20–24	64·3	64·8	+·5	61·7	61·9	+·2	59·6	59·9	+·3
„ - 25–29	61·9	62·3	+·4	57·3	57·4	+·1	57·9	57·9	0
June–July - 30– 4	60·7	60·8	+·1	61·5	61·7	+·2	62·4	62·7	+·3
„ - 5– 9	69·5	69·8	+·3	67·7	68·0	+·3	70·0	70·0	0
„ - 10–14	62·4	62·6	+·2	67·0	67·0	0	65·2	65·1	−·1
„ - 15–19	58·3	58·4	+·1	62·1	62·0	−·1	59·3	59·4	+·1
„ - 20–24	67·2	67·0	−·2	72·4	72·6	+·2	69·8	69·9	+·1
„ - 25–29	76·1	75·9	−·2	73·2	73·2	0	68·4	68·5	+·1
July–August 30– 3	62·0	62·2	+·2	57·6	57·7	+·1	60·8	60·8	0
„ - 4– 8	58·1	58·2	+·1	59·2	59·1	−·1	61·2	61·3	+·1
„ - 9–13	59·7	59·6	−·1	62·1	62·1	0	60·2	60·4	+·2
„ - 14–18	59·0	59·0	0	58·7	58·8	+·1	62·9	62·9	0
„ - 19–23	64·4	64·6	+·2	65·0	64·6	−·4	67·5	67·7	+·2
„ - 24–28	61·4	61·3	−·1	64·8	64·8	0	61·2	61·3	+·1
Augt.–Sept. 29– 2	59·9	60·1	+·2	58·5	58·7	+·2	56·7	56·7	0
„ - 3– 7	68·6	68·6	0	68·3	68·4	+·1	65·4	65·5	+·1
„ - 8–12	60·4	60·3	−·1	61·6	61·8	+·2	59·7	59·6	−·1
„ - 13–17	65·3	65·0	−·3	63·7	63·7	0	63·4	63·7	+·3
„ - 18–22	57·2	57·5	+·3	52·5	52·7	+·2	46·7	46·9	+·2
„ - 23–27	—	—	—	47·2	47·5	+·3	47·8	47·7	−·1
Septr.–Octr. 28– 2	57·6	—	—	53·3	53·6	+·3	51·4	51·3	−·1
1873.									
Jany.–Feby. 31– 4	35·0	35·5	+·5	30·9	31·3	+·4	29·8	30·1	+·3
„ - 5– 9	33·2	33·4	+·2	33·0	33·1	+·1	37·0	37·2	+·2
„ - 10–14	35·8	35·9	+·1	34·0	33·9	−·1	38·2	38·4	+·2
„ - 15–19	40·8	40·9	+·1	38·9	39·2	+·3	35·2	35·5	+·3
„ - 20–24	32·0	32·2	+·2	30·9	31·2	+·3	37·2	37·3	+·1
Feby.-March 25– 1	37·5	37·4	−·1	46·3	46·5	+·2	40·3	40·6	+·3
„ - 2– 6	42·7	42·9	+·2	42·9	42·8	−·1	49·9	50·0	+·1
„ - 7–11	44·6	44·8	+·2	42·1	42·2	+·1	44·9	45·0	+·1
„ - 12–16	39·3	39·5	+·2	35·5	35·8	+·3	34·7	34·6	−·1
„ - 17–21	41·3	41·5	+·2	40·5	40·6	+·1	38·9	39·0	+·1
„ - 22–26	39·6	39·7	+·1	43·0	43·3	+·3	45·4	45·7	+·3
„ - 27–31	44·4	44·5	+·1	45·2	45·5	+·3	47·1	47·2	+·1
		Mean -	+0°·12		Mean -	+0°·14		Mean -	+0°·14

FOURTH DAY.			FIFTH DAY.			MEANS OF THE FIVE DAYS.			Photographs.	Photographs.
Tabulations.	Planimeter.	Difference.	Tabulations.	Planimeter.	Difference.	Tabulations.	Photograph.	Weather Report Plates.	+ or − Tabulations.	+ − Report Plates.
41·2	41·4	+·2	44·3	44·5	+·2	44·8	45·1	44·9	+·3	+·2
48·2	48·6	+·4	49·5	49·7	+·2	48·1	48·4	48·0	+·3	+·4
50·1	50·2	+·1	53·5	53·6	+·1	52·8	52·7	52·9	−·1	−·2
41·1	41·4	+·3	40·6	40·7	+·1	43·9	44·2	44·0	+·3	+·2
48·7	48·7	0	51·4	51·6	+·2	48·0	48·1	47·7	+·1	+·4
51·6	51·4	−·2	52·7	53·0	+·3	53·3	53·5	53·6	+·2	−·1
52·2	52·3	+·1	51·1	51·4	+·3	53·5	53·6	53·4	+·1	+·2
47·8	48·0	+·2	47·0	47·4	+·4	48·1	48·5	47·9	+·4	+·6
49·9	50·1	+·2	50·6	50·4	−·2	46·9	46·9	47·0	0	−·1
44·4	44·6	+·2	47·5	47·5	0	47·3	47·4	47·3	+·1	+·1
51·7	51·7	0	53·2	53·1	−·1	50·8	50·9	50·8	+·1	+·1
59·1	59·2	+·1	58·0	58·5	+·5	59·1	59·0	59·1	−·1	−·1
54·0	54·3	+·3	53·2	53·3	+·1	53·4	53·5	53·7	+·1	−·2
53·2	53·3	+·1	54·1	54·4	+·3	53·8	54·0	53·9	+·2	+·1
61·8	62·0	+·2	62·2	62·4	+·2	58·0	58·1	57·8	+·1	+·3
70·7	70·9	+·2	67·8	68·1	+·3	68·7	68·7	68·6	0	+·1
60·7	60·6	−·1	66·4	66·5	+·1	62·6	62·7	62·5	+·1	+·2
61·6	61·9	+·3	58·7	58·9	+·2	59·5	59·7	59·5	+·2	+·2
62·5	62·6	+·1	65·9	65·8	−·1	62·6	62·7	62·6	+·1	+·1
62·0	62·2	+·2	61·0	61·2	+·2	66·0	66·3	66·3	+·3	0
59·4	59·5	+·1	59·1	59·1	0	62·6	62·7	62·7	+·1	0
61·0	61·2	+·2	64·3	64·3	0	61·0	61·0	61·2	0	−·2
68·2	68·4	+·2	70·9	71·1	+·2	69·7	69·8	69·8	+·1	0
66·6	66·9	+·3	66·1	66·4	+·3	70·1	70·2	70·2	+·1	0
57·9	58·0	+·1	58·5	58·5	0	59·3	59·4	59·3	+·1	+·1
61·3	61·6	+·3	59·8	59·6	−·2	59·9	60·0	60·0	+·1	0
59·0	59·1	+·1	57·7	57·7	0	59·7	59·8	59·7	+·1	+·1
66·0	66·1	+·1	65·4	65·5	+·1	62·4	62·5	62·4	+·1	+·1
65·6	65·7	+·1	63·7	63·8	+·1	65·3	65·1	65·2	−·2	−·1
57·2	57·4	+·2	58·3	58·1	−·2	60·6	60·6	60·5	0	+·1
56·9	56·5	−·4	66·2	65·9	−·3	59·7	59·6	59·8	−·1	−·2
63·3	63·4	+·1	63·0	62·8	−·2	65·7	65·7	65·6	0	+·1
66·4	66·4	0	65·0	65·4	+·4	62·6	62·7	62·8	+·1	−·1
57·1	57·3	+·2	61·3	60·9	−·4	62·2	62·1	62·3	−·1	−·2
43·9	43·9	0	44·0	44·0	0	48·8	49·0	49·3	+·2	−·3
49·3	—	—	55·8	56·0	+·2	—	—	—	—	—
54·8	55·1	+·3	58·1	58·2	+·1	—	—	—	—	—
33·2	33·3	+·1	35·6	35·7	+·1	32·9	33·2	33·2	+·3	0
35·5	36·0	+·5	34·7	34·9	+·2	34·7	34·9	34·9	+·2	0
37·7	37·9	+·2	40·2	40·3	+·1	37·2	37·3	37·0	+·1	+·3
33·6	33·8	+·2	33·6	33·9	+·3	36·4	36·7	36·3	+·3	+·4
35·6	35·9	+·3	28·9	29·3	+·4	32·9	33·2	32·8	+·3	+·4
34·7	34·8	+·1	39·8	39·7	−·1	39·7	39·8	39·8	+·1	0
45·3	45·6	+·3	40·6	40·8	+·2	44·3	44·4	44·2	+·1	+·2
39·8	40·1	+·3	40·2	40·5	+·3	42·3	42·5	42·2	+·2	+·3
38·5	38·5	0	38·9	38·9	0	37·4	37·5	37·4	+·1	+·1
39·9	40·2	+·3	36·9	36·9	0	39·5	39·7	39·3	+·2	+·4
45·3	45·6	+·3	44·9	45·3	+·4	43·6	43·8	43·7	+·2	+·1
50·5	50·6	+·1	49·0	49·2	+·2	47·3	47·4	47·3	+·1	+·1
	Mean -	+0̊·16		Mean -	+0̊·11			Mean -	+0̊·12	+0̊·09

The Committee then adjourned.

116, *Victoria Street*, *March* 2, 1874.

PRESENT:

Mr. De La Rue in the Chair.

Captain Evans. | Major-General Smythe.
Mr. Galton.

The Director was in attendance.

The Minutes of last meeting (February 16) were read and confirmed.

The following draft reply to the Board of Trade was adopted:—

IN reply to your letter of the 9th January last (M. 2117) I am instructed by the Committee to inform you that the letter of the President of the Meteorological Society does not clearly set forth any proposal for co-operation with the Meteorological Office, but the Committee infer from its general purport that the Meteorological Society (of London) are desirous of furnishing observations, provided that a sum of money be allotted to them—in effect, that, like the Scottish Meteorological Society, they are desirous of Government aid.

The Committee can only say, that if it be intended to aid one of the societies, the other would have an equal claim.

Read—The following letter:—

M.O. 429.

The Royal Society,
February 21, 1874.

DEAR SIR,

IN answer to your letter of 17th instant, addressed to the Secretary of the Royal Society, and requesting that the President and Council of the Royal Society would notify to the Meteorological Committee "their decision as to the appointment of the present Hydrographer as a member of the "Committee, and furthermore that they will replace Admiral Richards on the Committee as an "additional member," I am to inform you that the President and Council have appointed the Hydrographer for the time being a member of the Meteorological Committee, and have appointed Admiral Richards as an additional member.

I remain, &c.
(Signed) WALTER WHITE,
Assist. Sec., R.S.

The Director,
Meteorological Office.

Mr. Scott reported that he had already acted on the above letter, and had summoned Captain Evans to attend the present meeting—Approved.

Mr. Scott was instructed to inform the Board of Trade of Captain Evans' nomination, and of Admiral Richards' re-nomination, as members of the Committee.

Submitted—The circular which had been prepared for issue to shipowners, respecting the weather of August 1873 in the Atlantic (Minutes 1873, p. 79).

Reported—That the station at Hurst Castle had been established.

Read—A letter from Capt. Toynbee submitting "excellent" logs kept by

Capt. Gerrard Gaye, ship "Eliza Shaw" (Minutes 1872, p. 85.)
„ J. G. Goodenough, R.N., H.M.S. "Pearl." (Log kept by H. Hosken, Nav. Lieut.)
„ R. D. Lunham, s.s. "Charles Howard" (Minutes 1872, p. 43).
„ W. Symington, s.s. "Hong Kong" (Minutes 1873, p. 61).
„ F. Wherland, ship "Galatea" (Minutes 1872, p. 85).

Mr. Scott was instructed to present the "Wind and Current" Charts to Capt. Wherland, and to express the best thanks of the Committee to the other gentlemen.

Reported—That the following cheques for February were drawn on the 23rd of that month, on the signature of Major-General Smythe:—

					£	s.	d.
For Office:							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					*17	13	4
J. S. Harding, sen.					†7	14	0
T. D. Bell					†5	0	0
For Observatories:							
T. Kerr (Valencia), salary					20	16	8
R. & J. Beck, zinc plates					5	5	0
Elliott Bros., instruments					3	8	0
Malby and Sons, printing, &c.					6	5	0
R. H. Curtis	Computations, &c.				11	13	4
F. C. Steventon					10	16	8
C. Stodart					†8	8	0
C. H. Thompson					†4	0	0
J. A. Curtis					†6	18	0
R. Sargeant					*†3	15	0
For Telegraphy:							
The Postmaster General, July–September 1873					239	1	6
F. Gaster	Computations, &c.				13	6	8
W. L. Dallas					*†8	8	6
F. Brodie					*†6	6	10
For Ocean Meteorology:							
H. Toynbee, Marine Superintendent					33	6	8
J. J. Hicks, "A" thermometers		3	7	0			
" "M.O." do. and screens		43	3	4			
					46	10	4
Negretti & Zambra, repairing "A" thermometers		0	18	0			
" " "M.O." do.		32	19	8			
					33	17	8
E. Higgs, packing cases					4	7	6
D. McGregor & Co., Glasgow agents					2	10	0
W. Salmon	Computations, &c.				20	16	8
R. Strachan					‡19	3	4
C. Harding					*14	8	0
W. G. James					†6	18	0
T. E. Allen					†6	18	0
J. W. McVeagh					†4	0	0
For Office Expenses:							
J. S. Harding, jun., on account					90	0	0
Total					£728	6	0

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* Including allowance for extra attendance.
† Four weeks to the 21st.
‡ Including allowance for care of instruments.

SUBMITTED—The following STATEMENT respecting the RECORDS for JANUARY 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

—	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH :—														
Action - - - - - -	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good excepting low winds.	Direction. Good.	Velocity. Good.	Direction. Fair.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Fair.	Velocity Good.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " other causes - -	0	0	0	0	0	0	14	0	0	0	0	0	0	0
Orientation verified - - - -	—	—	31st.	—	13th.	—	1st.	—	—	—	Daily.	—	2nd.	—
No. of errors discovered by subsidiaries -	0	0	0	0	1	0	0	2	0	0	0	2	0	1
" " irregular differences	0	0	0	2	0	0	0	0	0	0	1	0	0	0
Result of 40 *Remeasurements* :—														
Greatest difference - - - -	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign - -	0·2	0·6	0·2	0·4	0·2	0·4	0·1	0·3	0·1	0·2	0·1	0·3	0·1	0·4
Residual difference (— Kew) - - -	0·0	+0·1	0·0	0·0	+0·1	0·0	0·0	+0·1	−0·1	0·0	0·0	0·0	+0·1	0·0
RAIN GAUGE :—														
Action - - - - - -	Fair.		Fair.		Fair.		Fair.		Good.		Good.		Fair.	
Records deficient, due to stoppage of clock -	0		0		0		0		0		0		0	
" " other causes - -	0		0		0		0		0		0		0	
Errors in tabulation - - - -	0		0		0		0		0		0		1	

BAROGRAPH :—							
Action - - - - - -	Good.	Good.	Fair.	Good.	Good.	Good.	Good until the 27th.*
Photography - - - - -	Do.	Do.	Good.	Do.	Do.	Do.	Good.
Records deficient, due to stoppage of clock -	0	0	9 hours	0	0	0	0
" " failure of light -	0	0	0	0	1	0	6
" " other causes - -	0	0	33 hours	0	0	0	0
No. of errors discovered—							
In entry of standard - - -	0	1	0	2	0	0	0
" calculating residual correction - -	0	0	1	0	0	0	1
" applying residual correction - -	0	0	0	3	0	0	5
" subtraction in subsidiary tables -	0	0	0	0	0	0	1
" tabulation by subsidiaries - -	0	2	0	0	0	0	0
" " irregular differences -	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—							
Greatest difference - - - - -	·0050	·0050	·0040	·0050	·0050	·0050	·0050
Mean difference irrespective of sign - -	·0022	·0020	·0019	·0023	·0019	·0020	·0023
Residual difference (— Kew) - - - -	—·0001	+·0007	+·0008	—·0014	—·0006	—·0009	—·0015
Mean monthly difference between simultaneous barograph and barometer readings - -	·0020	·0026	·0017	·0019	·0023	·0011	·0026

	December 1873.				July 1873.								December 1873.	
THERMOGRAPH :—														
Action - - - - - -	Good.		Good.		Good.								Good.	
Photography - - - - -	Do.		Do.		Do.								Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0							0	0
" " failure of light - -	0	0	0	0	0	0							1	0
" " imperfectly moistened bulbs - -	—	22	—	0	—	0							—	0
" " partially frozen -	—	10	—	4	—	0							—	0
" " other causes - -	0	0	0	0	0	0							0	0
No. of errors discovered in entry of standard -	0	0	0	0	0	0							0	0
" " by subsidiary measurements -	1	0	0	0	0	1							0	0
" " by subtraction in do. tables -	7	1	0	0	0	1							0	0
" " detected under glass scale -	0	0	0	0	0	0							0	0
Result of 40 *Remeasurements* :														
Greatest difference - - -	0·20	0·20	0·20	0·20	0·20	0·20							0·20	0·20
Mean difference irrespective of sign - -	0·06	0·05	0·07	0·05	0·09	0·07							0·08	0·09
Residual difference (— Kew) - - - -	+0·01	+0·01	—0·06	—0·02	+0·05	—0·02							+0·01	0·00
Mean monthly difference between simultaneous thermograph and thermometer readings -	0·13	0·17	0·09	0·11	0·10	0·11							0·10	0·10
No. of errors in maxima and minima - -	0	2	1	1	0	0							1	3

* Temperature bar accidentally broken.

The Committee then adjourned.

116, *Victoria Street, March* 16, 1874.

PRESENT:

Mr. De La Rue in the Chair.
Mr. Galton. | Major-General Strachey.
Sir Charles Wheatstone.

The Director was in attendance.

The Minutes of last meeting (March 2) were read and confirmed.

Read—The following letters:—

H. 1559.
M.O. 553.

SIR,

Board of Trade, March 9, 1874.

WITH reference to previous correspondence on the subject of sea temperature observations in connexion with the migration of food-producing fish, I am directed by the Board of Trade to transmit copy of a letter which has been received from the Commissioners of Northern Lighthouses, to whom application was made for the information asked for in your letter of the 21st ultimo, and I am to state that the Board would prefer that you should put yourself in direct communication with the Commissioners upon the subject.

I am, &c.
R. H. Scott, Esq. (Signed) C. CECIL TREVOR.

SIR,

Northern Lighthouses Office, Edinburgh,
March 5, 1874.

I HAVE to acknowledge receipt of your letter of the 24th ultimo, No. 1301. In answering your communication on the 18th July last the Commissioners stated "that the peculiar unsuitableness of lighthouse stations for making the experiments suggested do not seem to be understood."

not recd at MO.

The nature of the proposed observations forms a material element in judging of the lighthouse stations which may be suitable for obtaining them, and upon learning the nature of the experiments the Commissioners will at once be in a position to judge whether any stations are suitable.

I am, &c.
The Assistant Secretary,
Harbour Department, Board of Trade. (Signed) ALEX. CUNINGHAM.

Mr. Scott stated that he would now proceed to issue instructions for the observations to the several lighthouse boards.

Reported—That the electrometer had been returned by Mr. White (Minutes p. 1), and that the deposit receipt had been restored to him.

Read—A letter from Capt. Toynbee submitting an "excellent" log by Capt. Charles Tenzer Raymond, ship "British Consul" (Minutes, 1873, p. 9).

Mr. Scott was instructed to convey the best thanks of the Committee to Capt. Raymond.

Mr. Scott reported—That the number of subscribers to the proposed issue of lithographed hourly readings of the continuous records only amounted to 10, and he was instructed to send a specimen sheet to each of the gentlemen who signed the memorial (Minutes p. 1), of whom only 2 out of 32 had as yet subscribed, inquiring whether or not they wished to subscribe.

The Committee then adjourned.

116, *Victoria Street, March* 30, 1874.

PRESENT:

Admiral Richards in the Chair.

Captain Evans.

The Director was in attendance.

The Minutes of last meeting (March 16), were read and confirmed.

Submitted—The translation of the report of the Proceedings of the Vienna Congress (Official No. 21), (Minutes 1873, p. 52).

Mr. Scott reported that conjointly with Mr. Buchan, the other British Delegate, he had forwarded the following official report to the Board of Trade, as requested by that Office (Minutes 1873, p. 52):—

SIR,

WE have the honour to submit herewith, for the information of the Board of Trade a copy of an English Translation of the Report of the Proceedings of the Meteorological Congress at Vienna. We hope that the action which we have severally and conjointly taken as Delegates to the Congress, as noticed in the report, will meet with the approval of the Board of Trade, and we beg to assure you that we have most carefully abstained from pledging H.M.'s Government in any way.

Several questions bearing on the international prosecution of our science were discussed, but no resolutions involving expenditure of public money were adopted.

The only serious propositions of that nature were those concerning the establishment of international meteorological observatories and an international meteorological institute, of both of which the consideration was referred to a special committee for future report.

In conclusion, we have to report that a permanent Committee of seven members has been appointed to take notice of the steps taken in the several countries to carry out the resolutions of the Congress, and to make preparations for convening another Congress in the year 1876. This Committee will publish annual reports, and will hold a meeting at Utrecht in September 1874.

One of us, Mr. Scott, has been honoured with a seat on that Committee.

(Signed) ROBERT H. SCOTT,
ALEXANDER BUCHAN.

Thos. Gray, Esq.,
Assistant Secretary;
Marine Department, Board of Trade.

Submitted—The following report, which was ordered to be printed on the Minutes:—

GENTLEMEN,

March 27, 1874

MY Translation of the Report of the Vienna Congress has unfortunately only just been published, but as I have previous to the 1st of April to forward to Prof. Buys Ballot, Chairman of the Permanent Committee, appointed at that Congress, a report on the steps taken in this country to carry into effect the resolutions adopted at the Congress, I submit to you a translation of a circular which I have received, and a draft reply which I propose to forward, if it meets with your approval.

I have given the several questions in the programme at full length.

ROBERT H. SCOTT.

Circular.

SIR,

Utrecht, Dec. 31, 1873.

IN accordance with the wish expressed by the Permanent Committee for International Meteorology, I have the honour to remind you by this Circular that the Congress of Vienna has thought it desirable that the decisions which have been taken should be observed as much as possible, and that you should be invited to send to the Permanent Committee a report on the changes introduced in your country in conformity with these decisions, or, if these changes have not taken place, a communication of the motives which have prevented you from carrying them out.

The Committee requests you to forward your reply to me before the 1st April next, so that I may be able to prepare a general *resumé* of the various answers, in order to communicate the same to the members of the Committee.

I will not remind you of all the resolutions which you will find enumerated in the *Bericht des Meteorologen-Congresses in Wien;* it will suffice to mention some of them.

It would be superfluous to call your attention to the reports of the Sub-committees on the different instruments of observation, for I am sure that, before attending at the Congress, you were convinced, as a physicist, that the most perfect instruments were the only ones that should be employed. The time also was too short to discuss the reports thoroughly with the 30 members of the Congress, and moreover every year may bring improvements in each instrument, so that uniformity can scarcely be obtained, except as to the plan of publishing the observations.

It would therefore be desirable, in the first place, to know what instruments you use, and if you have been able to assure yourself of the existence of compared instruments in the other observatories of your country.

As to the publication of the observations, a plan will be proposed to you, at the same time you will be invited to report on the advantages or disadvantages of monthly or annual publication. As to the form of the symbols, I have to remind you that in case you do not make use of arrows for indicating the direction of wind, as recommended at the Leipzig Conference, and that you use letters, it is decided that from the beginning of next year the English designations N., N.N.E., N.E., E.N.E., E., E.S.E., &c. will be used.

The amount of clear sky will not be noted, but the amount of cloud, so that an entirely overcast sky will be indicated by the figure 10, and perfectly clear sky by 0.

The year will commence on the 1st January, and all the months will begin with the first.

The day will begin at midnight, and the hours will be indicated by 0 — 12 a.m., and 0 — 12 p.m.

Further it is recommended to calculate the mean temperature for five days, on the authority of M. Dove.

After each lustrum, commencing with the year 5n + 1, the observations will be grouped in tables, in order to be able better to compare the results obtained by other observatories.

This conformity in the small details is in the first place very desirable for the observatories, whose observations are to be grouped in tables to give a general *resumé* of the great atmospherical movements over the whole globe. For while introducing uniformity into what is necessary, perfect liberty must be given in doubtful matters.

Further you are requested to use the centigrade scale for the thermometer, and the metric system for the barometer, or at least to give the mean values in this scale, since it is desirable to avoid reductions. We might commence by rejecting Paris lines in every case.

As to International Meteorology, I have the honor to inform you that the Permanent Committee has received a very favorable reply from M. de Lesseps respecting the observations made on the borders of the Suez Canal. Mr. Hart has made a proposal of a more vast extent than that of which we have taken cognizance at Vienna, for the establishment of observatories on the eastern coasts of China, in connection with the stations of Yokohama, Nangasaki, and Batavia, a project which I have greatly approved.

I have founded an observatory at Djeddah, on the Red Sea, and I hope that you also, Sir, will have found means of establishing an observatory at some remote place, a new link of the network which is to cover the whole earth, or that you will be able to state that your Government, like that of Portugal, not to mention a smaller state, is disposed to establish observatories beyond its own limits.

This appears to me to be of the highest importance. It is above all necessary to found new observatories at well selected points of the globe.

Every observation or communication on your part, respecting the points mentioned in the Report of the Congress cannot be but very acceptable to the Permanent Committee.

(Signed) Buys Ballot,
The President of the Permanent Committee
of International Meteorology.

To the Director of the
Observatory at ——.

Proposed Reply.

I. Instrumental.

1. What is the best form of Barometers for Stations of the second order? Is the use of Aneroids for such stations admissible?

A formal request from the Permanent Committee to all Directors, for information as to the forms and prices of Barometers at present in use, seems to be desirable, as requested by the Congress.

A description of those employed in the United Kingdom and its colonies, is given in the Board of Trade Barometer Manual, 1871, and will be contained in the Instructions now in process of preparation.

2. What mode of exposure of Thermometers for the observation of Air Temperature is the best and most suitable for general adoption?

The experiments at the Royal Gardens, Kew, as to the effect of Height on Temperature are still in progress. No definite conclusion as to Thermometer screens has yet been adopted.

3. What is the best construction of Maximum and Minimum Thermometers?

In this country we are satisfied with the performance of Rutherford's Minimum, and of either Negretti's or Phillips' Maximum Thermometers.

The observations of Maximum and Minimum Thermometers will be taken at night as suggested.

4. What instruments should be employed for determining the intensity of Radiation, and in what way can the comparability of the results obtained be ensured?

Radiation is not as yet regularly observed at all the stations in the British Isles.

5. What apparatus is the best for determining Earth Temperatures?
At what depths should the observations be taken in order to attain the uniformity which is desirable?

The subject of Earth Temperature has not yet been undertaken by us on any large scale.

6. What apparatus should be employed for the determination of the Hygrometric condition of the air?
Are the Wet and Dry Bulb Thermometers sufficient?
Can the Hair Hygrometer be employed, and under what restrictions?

The Wet and Dry Bulb Thermometer is universally adopted, and Glaisher's Tables are generally used for treatment of the observations.

It is found that for continuous self-recording observations this instrument is far from being satisfactory, especially in winter.

7. In what way can uniformity in describing the Directions of the Wind be attained?
Is the deduction of the mean Direction of the Wind by Lambert's formula desirable?
Is it desirable or not to include very light winds (force 0) in constructing Wind Roses for the Direction of the Wind?

The decisions of the Congress are in accordance with the practice in this country.

8. What scale should be employed for the Force of the Wind when it is determined, not by actual measurement, but only by estimation?

The following Scale has been proposed by me in a paper recently read before the Meteorological Society, for the conversion of velocities in miles, per hour, or in metres per second, to the figures of Beaufort scale. It has been based on direct experiments, conducted at Holyhead and Yarmouth, with anemographs of the pattern described in the Report of the Meteorological Committee for 1869:—

Figures, Beaufort Scale.	Approximate Velocity. Miles per Hour.	Approximate Velocity. Metres per Second.
0. Calm	3	1·5
1. Light air	8	3·5
2. Light Breeze	13	6
3. Gentle „	18	8
4. Moderate „	23	10
5. Fresh „	28	12·5
6. Strong „	34	15
7. Moderate gale	40	18
8. Fresh „	48	21
9. Strong „	56	25
10. Whole gale	65	29
11. Storm	75	33·5
12. Hurricane	90	40

9. Is it desirable to introduce simple dial instruments for determining the Velocity of the Wind?
What units should be taken for the discussion of the velocity of the Wind?

We have as yet no experience of Prof. Wild's apparatus for Wind Observations.

10. What is the best form, size, and mode of exposure of Rain Gauges?
At what hour of the day should the fall be measured?

The experience in this country is decidedly against the necessity of employing a gauge with a collector of 14 ins. diameter (0·1 square metre area). The Meteorological Office will continue to employ gauges of 8 ins. diameter, which have been proved to work admirably.

It is not always possible to secure an exposure at a uniform height above the ground. In all cases the Meteorological Office gives in its publications the height above ground and above Mean Sea Level of the gauge.

The fall is measured in the morning and entered to the previous day; the duration of the fall, in hours, is given by estimation, and the recommendations of the Congress are accordingly carried out.

11. Should the days of Rain and Snow be counted separately or together?

12. Is it desirable in giving the falls of Hail to draw a distinction between "Graupel" and true Hail?

13. *a.* In counting Thunderstorms, should the Storms, as such, or the Days of storm be given?
b. In what way should the instances of Sheet-lightning be noticed?

We shall adhere to the regulations proposed by the Congress in relation to the above points.

14. What apparatus is to be recommended for the measurement of Evaporation?
What is the most suitable exposure for the Evaporation gauge?

Observations on Evaporation have not yet been generally adopted, but the subject will receive careful consideration.

15. *a.* In what way should the proportion of Cloud in the sky be estimated and indicated?

The recommendations of the Congress are in accordance with our practice, and I have the honour to submit some copies of the sketches of Cloud forms issued by this Office.

15. *b.* Is it desirable to introduce for Clouds, Hydrometeors, and for other extraordinary phenomena, symbols which shall be independent of local language, and therefore universally intelligible?

The symbols proposed by the Congress will be adopted in future publications whenever possible.

16. Should other Meteorological Elements than those already enumerated, *e.g.*, Atmospheric Electricity, Ozone, &c., be included in the scope of normal observations, and what are the best instruments for observing them?

There will be every desire to carry out the views adopted by the Congress wherever suitable experimental stations exist.

17. Is it desirable to introduce the same Units of Measure (viz., of Length, Degrees, and Time) in meteorological inquiries in all countries, or is it sufficient to lay down certain fixed rules for the conversion of the different measures employed in the several countries?

I cannot hold out hopes of the adoption of the metric and centigrade system in the United Kingdom and its colonies.

The Meteorological Office will continue to give important results of discussion in these measures, in addition to printing them in their original measures.

II. INSTITUTION AND REDUCTION OF THE OBSERVATIONS.

18. Can uniform Hours of Observation be introduced for the general observations to be made at the Meteorological Stations?

I can add nothing to the remarks made by me at the Congress. Our observatories record continuous observations. The great majority of British volunteer observers have expressed their preference for observations at 9 a.m. and 9 p.m., with maximum and minimum.

19. What are the rules and what the intervals of time for which the Means of the several Meteorological Elements should be calculated?

Which is the better plan, to begin the meteorological year with January or with December?

20. In what manner and for what intervals are the Normal Values for the individual Meteorological Elements to be deduced?

The decisions of the Congress will be fully carried out, being for the most part in accordance with our previous practice.

III. WEATHER TELEGRAMS.

21. Does the interchange of Weather Telegrams appear so useful that it should receive a fuller development and a firmer organisation?

The conditions of the British Isles are so exceptional as regards Weather Telegraphy that I can only undertake to carry out the recommendations of the Congress whenever *possible.*

The Office has already adopted one measure recommended by the Congress; the employment of a signal to indicate the direction of the wind in an apprehended storm. Preparations for the daily or occasional issue of "probabilities" are in progress.

Furthermore by a recent circular, of which I enclose copies, it has been endeavoured to assign a degree of precision to our warning intelligence by stating that—

3 out of 5 warnings of storms (force, upwards of 8)
4 „ 5 „ strong winds (force, upwards of 6)

have been found to be fully justified.

The signal is accentuated by the employment of a drum whenever necessary, as explained in the circular.

IV. MARITIME METEOROLOGY.

22. In what way can Maritime Meteorology be best introduced into the system of General Meteorology?

It is hoped that this subject will meet with proper treatment at the contemplated Maritime Conference.

V. ORGANIZATION.

23. Is it desirable that in each country there should be established one or more Central Institutions for the direction, collection, and publication of the Meteorological Observations?

The resolutions of the Congress are in accordance with the conditions existing here.

24. *a.* Can rules universally applicable be laid down for the Verification of Instruments and the Inspection of Meteorological Stations?

b. And is it advisable to introduce general Instructions for taking and calculating Meteorological Observations?

a. The resolutions of the Congress agree with our practice.

b. I am at present engaged in the preparation of Instructions, but I do not expect to be able to submit them in April.

25. In what manner can the agreement of the Standard Instruments of the different Central Establishments be best effected?

The resolutions of the Congress agree with our practice.

VI. PUBLICATION OF THE OBSERVATIONS.

26. Is it desirable and possible to publish the Meteorological Observations of a limited number of stations in each country in a uniform manner, and within a reasonably short time after the observations have been made?

There will be no difficulty in making a distinction between the publication of results of first-class observatories, and of stations of the second order, as recommended. The question of the possibility of publishing on a uniform plan the results from stations selected for international objects having been referred to the Permanent Committee no reply on it is called for here.

27. How is the exchange of the Meteorological Publications of different institutions and different countries to be carried out most speedily, safely, and simply?

The constant objections raised to the action of the Smithsonian Institution as central agents for the distribution of publications in the United States, owing to the serious delays, renders me unwilling to take any steps towards the establishment of such an agency in the United Kingdom.

VII. CARRYING OUT THE DECISIONS OF THE CONGRESS.

28. What regulations should be adopted in order to carry into effect the decision and the views of the Meteorological Congress?
    Is the appointment of a Permanent Committee and the organization of future Meteorological Congresses requisite for this purpose?
29. M. Plantamour's proposal respecting the foundation of an International Central Institute for Meteorology.

The Permanent Committee having been appointed, to which M. Plantamour's proposal (question 29) has been referred, and I myself having been honoured with a seat on the said Committee, I need not submit any remarks on the last two questions.

Mr. Scott was authorized to forward his proposed reply.

Reported—That Mr. Scott had been requested to give evidence before the Committee on Scientific Instruction on the 22nd of April (Minutes 1873, p. 9), and that he had furnished the following heads on which he wished to be examined:—

1. Relation of the Meteorological Office to the Board of Trade and Admiralty.
2. Organization in the United Kingdom.
3. Organization of Marine Work.
4. Meteorological Conference at Leipzig and Vienna.
5. Employment of Government Instruments. Supply of Instruments for Public use. Fishery Barometers.
6. Co-operation of Volunteer Observers.
7. Importance of an Experimental Observatory.

Reported—That negotiations were in progress for the publication of a daily weather chart in the "Times" and other newspapers, as proposed by Mr. Galton (Minutes 1873, p. 28).

Reported—That the circular respecting the hourly readings had been issued, and that several gentlemen had offered suggestions as to the proposed sheets. It had been resolved to adopt a monthly publication for each observatory, instead of a daily one for all.—Approved.

Read—A letter from Captain Toynbee, submitting an excellent log by Captain T. W. Freeman, S.S. "Wisconsin." Mr. Scott was instructed to present him with the Pilot Charts.

Reported—That the Daily Weather Charts had been supplied to S. H. Miller, Esq., Wisbech, in exchange.

Read—An application from the Society of Arts for the charts. Mr. Scott was instructed to inform the Secretary of the terms of subscription.

Reported—That Mr. Chadwick, Principal of the College at Spanish Town, Jamaica, had called at the office with reference to a plan for meteorological observations in Jamaica. As soon as he had made a written communication, Mr. Scott would report to the Committee thereon.

Resolved—That the sum of 1,000*l.* be transferred from the deposit account of the Committee to their current account at the Bank of England.

Mr. Scott was instructed to apply to the Treasury for an imprest of 2,000*l.* to meet the expenses of the Office.

SUBMITTED.—The following STATEMENT respecting the RECORDS for February 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

Points noticed at Kew.	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH :—	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
Action	Good.	Good.	Good.	Fair.	Fair.	Good.	Fair.	Fair.	Good.	Good.	Good.	Good.	Good.	Good.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " other causes	0	0	0	0	0	0	No trace; 13 hrs.	0	0	0	0	0	0	0
Orientation verified	28th.	—	—	—	11th.	—	1st.	—	25th.	—	Checked by independent vane.	—	—	—
No. of erors discovered by subsidiaries	0	0	0	2	0	0	0	0	0	0	0	0	0	1
" " irregular differences	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 Remeasurements :—														
Greatest difference	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign	0·1	0·4	0·1	0·3	0·0	0·4	0·1	0·4	0·1	0·3	0·1	0·4	0·2	0·3
Residual difference (— Kew)	—0·1	—0·1	—0·1	0·0	0·0	0·0	—0·1	0·0	0·0	0·0	—0·1	—0·1	+0·1	—0·1
RAIN GAUGE :														
Action	Fair.		Fair.		Fair.		Fair.		Fair.		Good.		Indifferent.	
Records deficient, due to stoppage of clock	0		0		0		0		0		0		0	
" " other causes	0		0		0		0		0		0		0	
Errors in tabulation	0		0		0		0		0		0		2	

Ships included in Report.

BAROGRAPH :—							
Action	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography	Do.	Do.	Do.	Fair.	Good.	Good.	Fair.
Records deficient, due to stoppage of clock	3 hrs.	0	0	0	0	0	3 hrs.
„ „ failure of light	0	0	0	0	0	0	0
„ „ other causes	0	0	2 hrs. cylinder stopped.	0	0	0	0
No. of errors discovered—							
In entry of standard	0	1	0	2	0	0	6
„ calculating residual correction	0	1	0	0	0	0	2
„ applying residual correction	0	0	0	1	1	0	1
„ subtraction in subsidiary tables	0	0	0	0	0	1	0
„ tabulation by subsidiaries	0	0	0	0	0	1	1
„ „ irregular differences	0	0	0	0	0	0	0
Result of 40 *Remeasurements :—*							
Greatest difference	·0040	·0050	·0040	·0050	·0050	·0040	·0050
Mean difference irrespective of sign	·0018	·0021	·0012	·0024	·0018	·0015	·0020
Residual difference (— Kew)	+·0004	+·0008	+·0002	—·0008	—·0005	—·0012	—·0004
Mean monthly difference between simultaneous barograph and barometer readings	·0018	·0023	·0019	·0017	·0017	·0015	·0025

	Falmouth.										Owing to working up the Falmouth arrears, the February thermograms for the various Observatories have not yet been checked.			
THERMOGRAPH :—	August, 1873.		September, 1873.		October, 1873.		November, 1873.		December, 1873.					
Action	Good, excepting from the 29th to 31st.		Good.		Good.		Good.		Good.					
Photography	Good.		Do.		Do.		Do.		Do.					
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0	0	0	0				
„ „ failure of light	0	0	0	0	0	0	0	0	0	0				
„ „ imperfectly moistened bulbs	—	0	—	0	—	0	—	0	—	0				
„ „ partially frozen	—	0	—	0	—	0	—	0	—	0				
„ „ other causes	22, air speck out of order.	14*	13 hrs., instt. under repair.	39 hrs.†	0	0	0	0	0	0				
No. of errors discovered in entry of standard	0	0	0	0	0	0	0	0	0	0				
„ „ by subsidiary measurements	0	0	0	1	0	0	0	0	0	0				
„ „ by subtraction in do. tables	0	0	0	0	0	0	0	1	0	0				
„ „ detected under glass scale	0	0	0	0	0	0	0	0	0	0				
Result of 40 *Remeasurements :—*														
Greatest difference	0·20	0·20	0·10	0·20	0·20	0·20	0·20	0·20	0·20	0·20				
Mean difference irrespective of sign	0·05	0·05	0·03	0·05	0·05	0·07	0·10	0·07	0·09	0·07				
Residual difference (— Kew)	—0·02	0·00	—0·01	+0·03	+0·02	—0·04	—0·10	—0·05	—0·08	+0·01				
Mean monthly difference between simultaneous thermograph and thermometer readings	0·10	0·11	0·09	0·10	0·06	0·07	0·05	0·06	0·06	0·06				
No. of errors in maxima and minima	0	0	0	0	0	0	0	0	0	0				

* Owing to the wet bulb being used as a dry bulb.

† 12 hrs. lost, instrument under repair ; 9 hrs. thermometer used as a dry bulb and 18 hrs. owing to the light shutter failing to act properly.

The following cheques for March were drawn :—

					£	s.	d.
For Office:							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					*18	3	4
J. S. Harding, sen.					†9	12	6
T. D. Bell					†6	5	0
C. W. Jacques, Rent for Quarter					133	13	0
Cole and Leigh, Coals					2	14	0
J. Rowsell, Books					2	7	0
For Observatories; Quarterly Allowances, &c.:							
D. Thomson, Aberdeen					‡61	17	6
T. R. Robinson, Armagh		40	14	0			
„ expenses for quarter		10	3	9			
					50	17	9
W. P. Dymond, Falmouth		‡65	12	6			
„ less repair of Thermometers		0	11	6			
					65	1	0
R. Grant, Glasgow		‡61	17	6			
„ postage, 1872–3		2	12	0			
					64	9	6
H. Williams, Holyhead					2	13	5
S. Jeffery, Kew		62	10	0			
„ Examination of Records		100	0	0			
					162	10	0
C. Clouston, Orkney					2	14	0
S. J. Perry, Stonyhurst					‡49	7	6
T. Kerr, Valencia		46	8	1			
„ salary for March		20	16	8			
					67	4	9
G. T. Watson, Yarmouth					4	0	6
P. Adie, Tabulating Scales					6	6	4
R. W. Munro, repairing Instruments					18	15	9
R. H. Curtis	Computations, &c.				11	13	4
F. C. Steventon					10	16	8
C. Stodart					†10	10	0
C. H. Thompson					†5	0	0
J. A. Curtis					†8	12	6
R. Sargeant					†4	5	0
For Telegraphy; Quarterly Allowances, &c.:—							
Postmaster-General, private wire					22	0	0
H. Todd, Cambridge					3	19	6
J. Costello, Dover					3	6	2
J. Tilston, Holyhead					3	6	6
G. Mitchell, Kingstown					3	5	11
F. Gaster, London					3	5	0
W. D. Penny, Nairn					4	4	6
E. J. Lowe, Notts					3	18	0
J. Lucas, Oxford					3	6	0
J. Merrifield, Plymouth					3	5	0
W. Sandford, Portishead					4	0	0
J. Hoar, Portsmouth					1	5	9
W. Thomas, Scilly					4	7	0
W. Lawrence, Shetland					3	5	0
J. Smith, Stornoway					3	5	0
J. Trotter, Thurso					3	6	2
J. Sinclair, Wick					3	5	6
Carried forward					£922	14	8

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* Including allowance for extra attendance.

† Five weeks to the 28th.

‡ Deduction made for forms supplied.

					£	s.	d.
Brought forward					922	14	8
For Telegraphy, &c.—*cont.*							
G. T. Watson, Yarmouth					3	6	10
C. Wakefield, York					3	5	7
W. Wightman & Co., printing, &c.					7	7	0
F. Gaster	Computations, &c.				*15	15	8
W. L. Dallas					*†9	12	9
F. Brodie					*†8	6	2
For Ocean Meteorology:—							
H. Toynbee, Marine Superintendent					33	6	8
Elliott Brothers, repairing "A" aneroids					15	19	0
J. J. Hicks, thermometers		2	6	0			
,, ,,		10	16	0			
					13	2	0
J. R. Jones, Aberdeen agent					4	8	11
H. J. Smart, Liverpool agent					12	4	8
Negretti and Zambra, repairing barometers					2	15	0
W. Salmon	Computations, &c.				20	16	8
R. Strachan					‡19	3	4
C. Harding					*14	17	6
W. G. James					†8	12	6
T. E. Allen					†8	12	6
J. W. McVeagh					†5	0	0
For Office Expenses:—							
J. S. Harding, jun., on account					60	0	0
Total					£1,189	7	5

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* Including allowance for extra attendance.
† Five weeks to the 28th.
‡ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, April* 20, 1874.

PRESENT:

Major-General Smythe in the Chair.

Mr. De La Rue. | Mr. Galton.
Captain Evans. | The Earl of Rosse.
Sir C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (March 30) were read and confirmed.

Read—The following letter:—

M. 5,238.
M.O. 943.

Board of Trade, 15 April 1874.

SIR,

IN reply to your and Mr. Buchan's letter of the 31st ultimo, forwarding a copy of the translation of the Report of the Proceedings of the Meteorological Congress at Vienna, I am directed by the Board of Trade to thank you and Mr. Buchan for your services in connexion with the Vienna Congress, and at the same time I am to inform you that this Board will be glad to be informed of the result of the deliberations of the Permanent Committee appointed to take notice of the steps taken in the several countries to carry out the resolutions of the Congress.

I am, &c.
(Signed) THOMAS GRAY.

R. H. Scott, Esq.

Mr. Scott reported that he had forwarded to the Board of Trade a copy of the circular and reply printed on the last Minutes, and that its receipt had been acknowledged (Lt. 881).

Mr. Scott stated that he had forwarded to the Science Commission a précis of questions which he was prepared to answer, based on the note printed in the Minutes for last meeting.

Reported—That an imprest for 1,000*l.* had been received from the Treasury.

Mr. Scott was instructed to apply for a further imprest so soon as this sum shall have been expended.

Reported—That no further communication had been received from Mr. Chadwick relative to the instruments for Jamaica, but Mr. Scott stated he was preparing a set to be taken out when Mr. Chadwick should leave England.

Read—A letter from Capt. Toynbee, submitting excellent logs by—

Capt. C. Johnson, ship " St. Lawrence " (Minutes, 1873, p. 34).
Capt. T. Tully, ship " Baroda " (Minutes, 1873, p. 43).

Mr. Scott was instructed to convey to both these gentlemen the marked thanks of the Committee.

Reported—That the Board of Northern Lights had stated their inability to co-operate with the Office in the matter of sea temperatures (Lt. 847; Minutes, 1873, p. 41; 1874, p. 18).

Reported—That the number of subscribers announced for the Hourly Readings was only 14. Mr. Scott was instructed to prepare a limited list of institutions to which they should be distributed free, and submit it to the Committee.

The officers and clerks were reappointed for the ensuing financial year, at the following salaries (see Minutes, 1867, p. 16; 1868, p. 100; 1869, p. 38; 1873, p. 24):—

	£	*s.*	*d.*
R. H. Scott, Director of the Office - - - -	800	0	0
Captain H. Toynbee, Marine Superintendent - - -	400	0	0
J. S. Harding, jun., 1st senior clerk - - - -	200	0	0
R. Strachan, 2nd senior clerk - - - - - -	180	0	0
(With 50*l.* additional for care of instruments.)			
F. Gaster, senior clerk - - - - - -	160	0	0
C. Harding, 1st junior clerk - - - - -	150	0	0
R. H. Curtis, 2nd junior clerk - - - - -	140	0	0
F. C. Steventon, 3rd junior clerk - - - - -	130	0	0
J. A. Curtis, junior clerk - - - - -	*100	0	0
W. G. James, „ - - - - -	*100	0	0
T. E. Allen, „ - - - - -	*100	0	0
J. S. Harding, sen., office keeper (weekly) - - -	1	18	6

The following scale of weekly salaries for temporary clerks, &c., was approved:—

	Increase.			£	*s.*	*d.*
W. L. Dallas - - - - -	£0	3	0	1	15	6
F. Brodie - - - - -	0	3	0	1	8	0
G. G. Francis - - - - -	0	3	0	1	8	0
T. D. Bell - - - - -	0	3	0	1	8	0
J. W. McVeagh - - - - -	0	3	0	1	3	0
C. H. Thompson - - - - -	0	3	0	1	3	0
H. N. Cobley - - - - -	0	0	0	1	0	0
R. Sargeant - - - - -	0	3	0	1	0	0
H. Chivers - - - - -	0	0	0	0	12	0
C. Stodart, engraver - - - -	0	0	0	2	2	0

The Rev. Thos. Kerr was reappointed Director of Valencia Observatory, at a salary of 250*l.* per annum.

Reported—That the Daily Weather Charts had been granted to—

The Police Commissioners, Broughty Ferry (for exhibition).
J. Quinton, Esq., jun., Literary Institution, Norwich, in exchange.

A cheque in favour of J. S. Harding for 30*l.* for current expenses was drawn.

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* Increase of 10*l.* since last year.

The Committee then adjourned.

116, *Victoria Street, April* 27, 1874.

PRESENT:

Major-General Smythe in the Chair.
Mr. Gassiot. | The Earl of Rosse.
Sir E. Sabine.

The Director was in attendance.

The Minutes of last meeting (April 20) were read and confirmed.

Mr. Scott reported that he had been examined before the Science Commission on the 22nd inst., on the Organization and Financial Management of the Office. His examination on the Scientific Work of the Office had been postponed.

Read—A letter from Captain Toynbee, submitting an excellent log by Captain John Owen, ship "W. G. Russell."

Mr. Scott was instructed to present to Captain Owen a copy of the Wind and Current Charts.

Reported—That Mr. Steventon having been appointed assistant to Mr. Meldrum at the Mauritius Observatory, had resigned his clerkship in the Office.

Mr. Scott submitted the name of Mr. J. Rigby, of Kew Observatory, for appointment as a temporary clerk, in the place of Mr. Steventon, at a salary of 1*l.* 18*s.* 6*d.* a week.—Approved.

The following cheques for April were drawn:—

		£	*s.*	*d.*
For Office:				
R. H. Scott	Salaries and wages	66	13	4
J. S. Harding, jun.		16	13	4
J. S. Harding, sen.		*7	14	0
T. D. Bell		*5	12	0
Cole and Leigh, coals		2	16	0
C. Gilman, Gas Co.		2	16	6
G. S. Freeman, Insurance Co.		2	8	0
Williams and Norgate, books		3	11	9
For Observatories:				
T. Kerr, Valencia		20	16	8
Malby and Sons, printing, &c.		16	13	9
R. H. Curtis	Computations, &c.	11	13	4
F. C. Steventon		10	16	8
C. Stodart		*8	8	0
C. H. Thompson		*4	12	0
J. A. Curtis		8	6	8
R. Sargeant		*†4	4	0
For Telegraphy:				
N. J. Holmes, Scilly Is. Co.		9	19	6
Benjamin Edgington, cones		94	3	8
F. Gaster	Computations, &c.	†15	1	8
W. L. Dallas		*†8	12	0
F. Brodie		*†7	4	3
	Carried forward	£328	17	1

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* Four weeks to the 25th.
† With allowance for extra attendance.

		£	s.	d.
	Brought forward	328	17	1
For Ocean Meteorology:				
H. Toynbee, Marine Superintendent		33	6	8
P. Adie, repairing " A." barometers		3	0	6
W. Salmon	Computations, &c.	20	16	8
R. Strachan		‡19	3	4
C. Harding		14	4	10
W. G. James		8	6	8
T. E. Allen		8	6	8
J. W. McVeagh		*4	12	0
For Office Expenses :—				
J. S. Harding, jun., on account		99	0	7
	Total	£539	15	0

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* Four weeks to the 25th.

‡ With allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street*, *May* 4, 1874.

PRESENT:

Mr. De La Rue in the Chair.

Mr. Galton. | Rear-Admiral Richards.
Major-General Smythe.

The Director was in attendance.

The Minutes of last meeting (April 27) were read and confirmed.

Read—A letter from Mr. W. Salmon, resigning his situation as chief clerk.

Resolved—That Mr. Salmon's resignation be accepted, with the grant of 150*l.*, and also with permission to Mr. Salmon to desist from work as soon as his successor is appointed.

The following re-arrangement of the staff was agreed upon, and salaries fixed, for the current year. The question of maximum salaries attainable was deferred.

	£	s.	d.
J. S. Harding, jun., chief clerk	230	0	0
R. Strachan, 1st senior clerk (with 50*l.* additional for instruments)	190	0	0
F. Gaster, 2nd senior clerk	170	0	0
C. Harding, 3rd senior clerk	160	0	0
R. H. Curtis, 1st junior clerk	150	0	0
J. A. Curtis, 2nd junior clerk	100	0	0
W. G. James, 3rd junior clerk	100	0	0
T. E. Allen, 4th junior clerk	100	0	0
W. L. Dallas, 5th junior clerk	92	0	0
F. Brodie, 6th junior clerk	78	0	0

All other appointments to be as proposed on Minutes of 20th and 27th April.

Read—A letter from Captain Toynbee, submitting an excellent log by Captain G. Rennie Stuart, ship " Otago " (Minutes, 1873, p. 34).

Mr. Scott was instructed to convey to Captain Stuart the marked thanks of the Committee.

Submitted—The following statement of accounts paid and liabilities for one year to 31st March 1874:

——	Paid.			Estimated Liabilities.		
	£	s.	d.	£	s.	d.
OFFICE :—						
Salaries - - -	1,275	12	3	—		
Rent, fuel, &c. - -	645	9	10	3	0	0
Contingencies - -	171	13	3	7	0	0
LAND METEOROLOGY :—						
Expenses at observatories -	2,722	9	10	84	0	0
New instruments for ditto -	—			—		
Computations - - -	783	16	5	—		
Telegraphy - - -	1,182	4	2	763	0	0
Inspections, D. W. Charts, &c.	479	6	10	107	0	0
Computations - -	522	18	4	—		
OCEAN METEOROLOGY :—						
Marine Superintendent -	400	0	0	—		
Instruments, Admiralty -	338	5	7	93	0	0
Ditto Mercantile Marine -	419	0	7	47	0	0
Computations and care of instruments - -	1,055	4	2	—		
Totals - -	9,996	1	3	1,104	0	0

Grand total - - £11,100 1*s.* 3*d.*

ROBERT H. SCOTT.

Mr. Scott was instructed to request Lord Rosse and General Strachey to act as auditors of the accounts.

The Committee then adjourned.

116, *Victoria Street*, *May* 18, 1874.

PRESENT:

Mr. Galton in the Chair.

Captain Evans.
The Earl of Rosse.
General E. Sabine.
Major-General Strachey.
Sir C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (May 4) were read and confirmed.

Mr. Scott reported that he had for the second time been examined before the Science Commission on the 5th inst.

Mr. Scott reported with reference to the contemplated Conference for Maritime Meteorology, that a majority of the sub-committee of five members appointed by the Permanent Committee of the Vienna Congress, had decided that it would be advisable that any meeting held in the present year should be merely preliminary and of an unofficial character.

The following programme had been unanimously adopted (Minutes, p. 14):—

A general wish has of late been expressed that the measures for the prosecution of Maritime Meteorology proposed at the International Conference at Brussels in 1853 should be reconsidered, now that the experience of more than 20 years of the operation of these measures has enabled meteorologists to form opinions as to their utility.

At the Meteorological Conference at Leipzig in 1872, and again at the International Congress at Vienna in 1873, preliminary discussions took place on the subject of the more successful prosecution of Ocean Meteorology. Certain resolutions were adopted at Leipzig and confirmed at Vienna, and accordingly it seems proper to embody them in the present programme. They run as follows:—

> "1st. Thorough uniformity in methods and instruments should be aimed at in the same measure as for observations on shore. This will be most satisfactorily attained by the chiefs of the central institutes—the establishment of which in all countries, in which they do not already exist, and in which the maritime interests demand them, must be declared as absolutely necessary

—entering into relations with each other and agreeing on the separate details, the construction of the instruments, the hours of observation, the journal, &c.

" 2nd. Unity of measures and scales is desirable, and to this end the introduction of millimètres for the barometer and the centigrade scale for the thermometer should be aimed at. While, however, the comparison of standard instruments of the individual central stations must be insisted on, the uniformity of scales is at present only declared as desirable.

" 3rd. The Committee would urge the importance of the co-operation of the navies, inasmuch as by their assistance, and by the opportunities afforded thereby of completeness in certain observations, the determination of factors and constants is rendered possible, which can be used with advantage for the reduction of certain results derived from the general system of observations.

" 4th. With reference to the utilisation of the results, the Committee would urge similarly the importance of uniformity in the methods employed. In close relation therewith was the carrying out of the division of labour of the central stations of the individual states. This principle must be recognized as of the greatest importance for the further development of Marine Meteorology. The repetition of work over definite regions, with reference to the area to be investigated, must be declared as indefensible in the interests of this development."

It was further resolved—" That the convening of a Maritime Meteorological Conference is desirable."

While accepting the above resolutions as a general expression of the principles which should form the basis of an agreement as to future operations in the field of Ocean Meteorology, the Sub-Committee to whom the negotiations preparatory to the assembling of a Conference have been entrusted, consider that it is advisable to enter more minutely into the details, and have accordingly agreed on the following series of questions:—

In the case of a nation which sent any representative to the Brussels Conference in 1853, a circular should be addressed to the chief of the Office for Maritime Meteorology, if such exist, or to the chief of the meteorological organization of the country, requesting them to state:—

1. To what extent the resolutions adopted at Brussels have been carried out in this country?
2. What have been the grounds for departure from them, if such departure has taken place?

And to send his reply to the Secretary to the Sub-Committee, Mr. Robert H. Scott, 116, Victoria Street, London, S.W., before the 1st of June next, in order to allow ample time to draw up a report on the replies for consideration at the Conference.

It seems advisable that, as above stated, the action taken at Vienna should be carefully reconsidered under several heads which will now be recapitulated.

I.—OBSERVATIONS. In respect of this subject it will be most convenient to take the "Abstract Log" of the Brussels Conference, and to discuss the several subjects of observation noted therein in the order of sequence of the columns.

Cols. 1 and 6.	*Date and Position of the Observations.* Is it your opinion that a fresh column should be added, headed "Course and Distance by the Log in every Watch of 4 hours?"
„ 7 and 8.	*Currents.*
„ 9	*Magnetic Variation.* Is it desirable to give an additional column for the "Direction of Ship's Head?"
„ 10 and 11.	*Wind, Direction and Force.* Is it possible to employ an anemometer at sea so as to give trustworthy results? Can the use of the Beaufort Scale be made universal?
„ 12 and 13.	*Barometer.* To what degree of minuteness is it necessary to observe this instrument?
Cols. 14 and 15.	*Thermometer.—Dry Bulb and Wet Bulb.* Should these observations be required from all ships?
„ 16.	*Forms and Direction of Clouds.* Is this column sufficient, or should any notice be taken of more than one stratum of clouds?
„ 17.	*Proportion of Sky Clear.* Is it not advisable to substitute for this heading "Proportion of sky clouded"?
„ 18.	*Hours of Rain, Fog, Snow, &c.* Is it desirable to retain this heading, or to substitute for it and No. 23 a column headed—" Weather by Beaufort Notation"?
„ 19.	*State of the Sea.* Should this be given according to a Numerical Scale?
„ 20.	*Temperature of Sea Surface.*
„ 21.	*Specific Gravity „ „*
„ 22.	*Temperature at Depths.* Is it desirable to retain these two last columns, or can the observations when taken be inserted in the column for "Remarks"?
„ 23.	*Weather.* See No. 18.
„ 24.	*Remarks.*

II. INSTRUMENTS.—What patterns of instruments should be employed for any observations which may require them?

Is there a reasonable possibility of introducing the Metric and Centigrade systems for general use at sea?

III. **Instructions.**—Is it possible to devise a general form of instructions to ensure uniformity in regard of methods of observation and registration?

IV. **Observers.**—What control should be exercised over the observers as to their instruments and registers?

Is it desirable that all instruments employed should be the property of the central establishment, and *lent* to the observers?

V. **Co-operation of the Royal Navy.**— To what extent can ships of war assist in forwarding the ends of Meteorological Inquiry?

VI. **Discussion.**—Can general suggestions be thrown out as to the most profitable mode of discussion of the observations?

VII. **Subjects of Inquiry.**—To what extent can a division of labour as regards subjects of inquiry be carried out in a spirit of fairness to the collecting and discussing establishments respectively?

VIII. **Sailing Directions.**—In how far are purely practical investigations, such as the preparation of sailing directions, admissible for a Scientific Institution?

Any gentleman into whose hands this programme may come, and who is himself not likely to attend the Conference, is requested to forward any remarks he may wish to make on any of the subjects mentioned herein to Mr. Scott, at the above address, before the 1st of July 1874.

He had then issued on the 5th instant the following circular letter to the members of the Sub-Committee:—

Sir,
Meteorological Office, London, May 5, 1874.

I have the honour to inform you that a majority of the Sub-Committee, viz., Prof. Buys Ballot, Prof. Mohn, and myself, have decided that it is unadvisable to hold an official conference before that an opportunity shall have been afforded for a preliminary discussion of the subject of Maritime Meteorology, in accordance with the programme already sanctioned by you, at a meeting of a more private character.

It is therefore proposed that such a meeting should be held this year, and you are requested to express your opinion as to whether or not it should be held in *London*, at the end of August, immediately after the meeting of the British Association, which takes place at Belfast, and lasts for a week from August 19; or in *Utrecht*, in September, after the meeting of the Permanent Committee of the Vienna Congress.

Meanwhile I shall at once issue the circular, as already authorised by you, to collect information as to the operation of the Brussels Conference.

The question of the mode of issue of invitations will form the subject of a separate communication, as soon as I shall have been honoured with your reply to this present letter.

I have, &c.
(Signed) Robert H. Scott, Director.

He had then on the 7th inst., as directed by the programme, issued the following circular to the several countries which sent representatives to the Brussels Conference in 1853:—

Maritime Meteorology.

Sir,
Meteorological Office, London, May 7, 1874.

The Sub-Committee, appointed by the Permanent Committee of the Vienna Congress, propose to hold a meeting in the course of the present year, to discuss the subject of Maritime Meteorology, with especial reference to the decisions taken thereon at the Brussels Conference in 1853, in order to ascertain whether or not it will be advisable to hold an official conference on the subject in 1875, or later.

As your country was represented at Brussels by , I am to request you to be so good as to furnish to me before the 1st of June, or as soon after as convenient, replies to the following questions, in order that I may prepare an abstract of the replies for submission to the proposed meeting.

1. To what extent the resolutions adopted at Brussels have been carried out in your own country?
2. What have been the grounds for departure from them, if such departure has taken place?

If this matter does not fall within your own department, I shall be obliged if you will kindly forward the communication to the proper quarter.

I have, &c.
(Signed) Robert H. Scott, Director.

The gentlemen to whom this circular had been respectively addressed had been—

For Belgium -	- Mons. E. Quetelet.
„ Denmark -	- Capt. N. Hoffmeyer.
„ France -	- Capt. E. Mouchez.
„ Holland -	- Prof. Buys Ballot.
„ Norway -	- Prof. H. Mohn.
„ Portugal -	- Mons. Fradesso da Silveira.
„ Russia -	- Prof. H. Wild.
„ Sweden -	- Prof. R. Rubenson.
„ United States	- Rear-Admiral C. H. Davis, Naval Observatory.

He would report again to the Committee as soon as the question of the date and place of the meeting shall have been settled.

It was resolved, in accordance with the recommendation of the Vienna Congress, that a form of receipt for publications should be issued together with an advice of the transmission of the book in question.

Read—A letter from Capt. Toynbee, requesting permission to publish the information from Squares 38, 39, 40, embracing the district of the Atlantic between 10° and 20° N. Latitude and 10° and 40° W. Longitude, on 12 monthly charts, on a plan somewhat similar to that already adopted for Square 3. The paucity of information would not allow of a more minute discussion of the materials.—Approved.

The following cheques for May were drawn :—

		£	*s.*	*d.*
For Office:				
R. H. Scott	Salaries and wages	66	13	4
J. S. Harding, jun.		*21	13	4
J. S. Harding, sen.		†7	14	0
T. D. Bell		†5	12	0
For Observatories:				
R. H. Curtis	Computations, &c.	13	6	8
C. H. Thompson		†4	12	0
C. Stodart		†8	8	0
J. A. Curtis		8	6	8
R. Sargeant		†4	0	0
T. Kerr (Valencia)		20	16	8
For Telegraphy:				
F. Gaster	Computations, &c.	*‡15	18	2
W. L. Dallas		‡10	5	4
F. Brodie		*‡8	1	7
For Ocean Meteorology:				
H. Toynbee, Marine Superintendent		33	6	8
R. Strachan	Computations, &c.	*§20	16	8
C. Harding		*‡15	18	2
W. G. James		8	6	8
T. E. Allen		8	6	8
J. W. McVeagh		†4	12	0
W. Salmon, gratuity (Minutes, May 4)		150	0	0
Hon. B. F. Primrose, repairing barometers		3	18	6
On Account:				
R. H. Scott, Inspections		15	0	0
J. S. Harding, jun., office expenses		100	0	0
Total		£555	13	1

* Including arrears for increase since 1st April.
† Four weeks to the 23rd.
‡ Including allowance for extra attendance.
§ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, June* 1, 1874.

PRESENT:

The Earl of Rosse in the Chair.

Mr. De La Rue. | Major-General Smythe.

Major-General Strachey.

The Director was in attendance.

The Minutes of last meeting (May 18) were read and confirmed.

The draft of the Annual Report for 1873 was submitted and approved with certain verbal alterations.

Mr. Scott submitted the following report:

I report that I have completed my inspection of the southern stations.

Portishead, visited May 25. Everything was in very good order, except that the thermometer screen was not quite firmly fixed in the ground.

Scilly, visited May 27.

Plymouth, visited May 28.

Both these stations continue very satisfactory.

Hurst Castle, visited May 29. This was my first visit to this station, which is extremely well placed for all but temperature observations. The reporter is very intelligent, and takes a great interest in his work. The difficulty about temperature arises from the fact that the office is situated in the highest part of the fortifications, and shade can hardly be procured. I think of probably sending a Stevenson's screen for use at the station. We have already derived great benefit from the substitution of Hurst Castle for Portsmouth.

I visited the observatory at Falmouth on the 26th, and found everything in good condition.

Read—A letter from Captain Toynbee, submitting excellent logs by

Captain C. W. Kennedy, ss. "Baltic" (Minutes 1873, p. 61).
Captain T. L. Wadham, barque "Vere" (Minutes 1873, p. 65).

Mr. Scott was instructed to convey to both these gentlemen the marked thanks of the Committee.

Reported—That the Daily Weather Charts had been supplied to

Mr. J. Coupland, Harrogate, for exhibition.
Mr. W. Jobbins, Hurst Castle, in exchange.

SUBMITTED—The following STATEMENT respecting the RECORDS for January 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

—	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia		Kew, July 1873.	
THERMOGRAPH :—																
Action - - - - -	Good.		Good.*		Good.		Good.		Good.		Two days' traces for the dry and wet bulb have been re-tabulated at Kew. Good.		Good.†		Good.	
Photography - - - - -	Do.		Do.		Do.		Do.		Do.		Do.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -	0	0	1 hr.	1 hr.	0	0	0	0	0	0	0	0	0	0	0	0
" " failure of light -	0	0	0	3 hrs.	0	0	0	0	0	0	0	0	0	0	0	0
" " imperfectly moistened bulbs - -	—	0	—	0	—	0	—	0	—	11	—	1	—	0	—	1
" " partially frozen bulbs	—	14 hrs.	—	0	—	0	—	8	—	2	—	0	—	0	—	0
" " other causes -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of errors discovered in entry of standard -	0	0	10	4	0	0	0	0	0	0	0	0	0	0	0	0
" " by subsidiary measurements	1	0	0	2	0	0	1	1	0	1	0	0	2	0	0	0
" " of subtraction in do. tables	5	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0
" " detected under glass scale -	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Result of 40 *Remeasurements* :—																
Greatest difference - - - -	0·20	0·20	0·20	0·10	0·20	0·20	0·20	0·20	0·20	0·20	0·20	0·20	0·20	0·20	0·20	0.20
Mean difference irrespective of sign - -	0·06	0·05	0·08	0·04	0·05	0·04	0·06	0·07	0·04	0·04	0·07	0·08	0·07	0·09	0·03	0·05
Residual difference (— Kew) - -	0·00	+0·01	+0·02	+0·01	—0·01	—0·01	+0·01	+0·06	+0·01	+0·01	—0·03	—0·06	+0·03	—0·02	0·00	0·00
Mean monthly difference between simultaneous thermograph and thermometer readings -	0·14	0·18	0·10	0·10	0·08	0·09	0·07	0·04	0·08	0·09	0·11	0·14	0·11	0·15	0·13	0·15
No. of errors in maxima and minima - -	0	0	1	0	0	0	1	1	1	0	0	0	1	1	0	0

* Four days traces have been re-tabulated at Kew for the dry bulb and five days for the wet.

† Six days' traces of both dry and wet bulb have been re-tabulated at Kew.

Submitted—The following Statement respecting the Records for February 1874, received from the Self-Recording Observatories, which have been examined at Kew Observatory (see Minutes 21st December 1868).

——	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
THERMOGRAPH :—									September 1873.					
Action - - - - -	Good.		Already sent.		Good.		Good.		Good.		Good.		Already sent.	
Photography - - - - -	Do.				Do.		Fair.		Do.		Do.			
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -	0	0			0	0	0	0	1 hr.	1 hr.	0	0		
„ „ failure of light -	0	0			0	8 hrs.	0	0	0	0	0	0		
„ „ imperfectly moistened bulbs - -	—	39 hrs.			—	0	—	0	—	0	—	13 hrs.		
„ „ partially frozen bulbs -	—	19 hrs.			—	0	—	11	—	0	—	6 hrs.		
„ „ other causes - -	0	0			0	0	0	0	0	0	0	0		
No. of errors discovered in entry of standard -	0	0			0	0	0	1	0	0	0	1		
„ „ by subsidiary measurements	0	0			0	0	0	0	0	1	0	0		
„ „ of subtraction in do. tables -	2	1			0	0	0	0	0	0	0	0		
„ „ detected under glass scale -	0	0			0	0	5	0	0	0	0	0		
Result of 40 *Remeasurements* :—														
Greatest difference - - - -	0·20	0·20			0·20	0·20	0·20	0·20	0·10	0·10	0·20	0·20		
Mean difference irrespective of sign -	0·05	0·06			0·05	0·08	0·08	0·07	0·05	0·06	0·06	0·10		
Residual difference (—Kew) - - -	+0·03	0·00			0·00	—0·02	—0·07	—0·01	—0·01	—0·01	+0·01	+0·06		
Mean monthly difference between simultaneous thermograph and thermometer readings -	0·13	0·17			0·07	0·07	0·08	0·05	0·10	0·16	0·14	0·16		
No. of errors in maxima and minima - -	1	0			0	0	0	0	0	0	0	0		

SUBMITTED—The following STATEMENT respecting the RECORDS for March 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
			Not yet examined.						Not yet examined.		Not yet examined.			
	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
ANEMOGRAPH:—														
Action - - - - -	Good.	Good			Good.	Good.	Good.	Good.					Good.	Good.
Records deficient, due to stoppage of clock -	0	0			0	0	0	0					0	0
" " other causes -	0	0			0	0	0	24 hrs.*					0	0
Orientation verified - - - -	—	—			18th	—	1st	—					1st.	—
No. of errors discovered by subsidiaries -	0	0			0	0	0	0					0	3
" " irregular differences	0	0			0	0	0	0					0	0
Result of 40 *Remeasurements*:—														
Greatest difference - - -	0·0	1·0			1·0	1·0	1·0	1·0					1·0	1·0
Mean difference irrespective of sign -	0·0	0·2			0·1	0·1	0·0	0·2					0·1	0·3
Residual difference (—Kew) - - -	0·0	0·0			0·0	0·0	0·0	—0·1					0·0	0·0
RAIN GAUGE.														
Action - - - - -	Good.				Fair.		Fair.						Fair.	
Records deficient, due to stoppage of clock -	0				0		0						0	
" " other causes - -	0				0		0						0	
Errors in tabulation - - - - -	0				0		0						1	

BAROGRAPH :—							
				Not yet examined.	Not yet examined.		
Action - - - - -	Good.	Good.	Good.			Good.	Good.
Photography - - - - -	Do.	Do.	Do.			Do.	Fair.
Records deficient, due to stoppage of clock -	0	0	0			0	0
" " failure of light -	0	0	0			0	0
" " other causes - -	0	0	0			0	0
No. of errors discovered—							
In entry of standard - - -	0	1	0			0	3
" calculating residual correction -	0	0	2			0	0
" applying residual correction -	0	0	0			0	5
" subtraction in subsidiary tables -	0	0	0			0	0
" tabulation by subsidiaries - -	0	0	0			0	0
" " irregular differences -	0	0	0			0	0
Result of 40 *Remeasurements* :—							
Greatest difference - - - - -	·0040	·0050	·0040			·0040	·0050
Mean difference irrespective of sign - -	·0013	·0020	·0017			·0014	·0012
Residual difference (— Kew) - - -	— ·0006	— ·0006	+ ·0008			·0000	— ·0001
Mean monthly difference between simultaneous barograph and barometer readings - -	·0016	·0023	·0021			·0015	·0028

THERMOGRAPH :—														
	Not yet examined.		February 1874.		Not yet examined.		Not yet examined.		August 1873.		Not yet examined.		February 1874.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Action - - - - -			Good.						Good.				Good.	
Photography - - - - -			Do.						Do.				Do.	
Records deficient, due to stoppage of clock -			0	0					0	0			0	0
" " failure of light -			0	0					0	0			0	0
" " imperfectly moistened bulbs - -			—	3 hrs.					—	7			—	0
" " partially frozen bulbs -			—	5 hrs.					—	0			—	0
" " other causes - -			0	0					0	0			0	0
No. of errors discovered in entry of standard -			4	6					0	0			1	4
" " by subsidiary measurements -			1	0					0	0			0	0
" " of subtraction in do. tables -			0	0					0	1			0	0
" " detected under glass scale -			0	0					0	0			0	0
Result of 40 *Remeasurements* :—														
Greatest difference - - - - -			0·20	0·10					0·20	0·20			0·20	0·20
Mean difference irrespective of sign - -			0·05	0·06					0·06	0·07			0·09	0·06
Residual difference (—Kew) - - -			+0·01	0·00					0·00	+0·01			+0·06	+0·02
Mean monthly difference between simultaneous thermograph and thermometer readings -			0·10	0·10					0·12	0·14			0·10	0·12
No. of errors in maxima and minima - -			0	1					0	1			3	2

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* March 13th 10 a.m. to 14th 10 a.m. No trace of velocity or direction; pencils omitted to be lowered on to the paper; the direction, however, has been obtained from spare vane.

The Committee then adjourned.

116, *Victoria Street, June* ~~9~~8, 1874.

PRESENT:

The Earl of Rosse in the Chair.

Mr. Galton.	Major-General Smythe.
Sir E. Sabine.	Sir C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (June 1) were read and confirmed.

Reported—That the vote for the Office had passed the House of Commons on the 1st inst. Mr. Scott was instructed to apply to the Secretary of the Treasury for 9,000*l.*, the balance due, and to lodge it, when received, in the following way:

7,000*l.* to the deposit account (London and Westminster Bank),
2,000*l.* to the current account (Bank of England).

Submitted—The auditors' report.

Submitted also a memorandum of the balance showing liabilities, &c., which was directed to be appended to the balance sheet.

METEOROLOGICAL OFFICE: ACCOUNT of RECEIPTS and PAYMENTS for the year ended the 31st March 1874.

RECEIPTS.

				£	*s.*	*d.*
Balance from year 1872–3				1,643	12	5
Parliamentary vote				10,000	0	0
General J. H. Lefroy	14	9	0			
Messrs. Power Bros.	3	6	8			
Rev. G. Style	8	0	0			
Bishop of Rupert's Land	8	15	0			
Dr. J. Campbell	8	1	0			
Dr. C. Smallwood	0	17	0			
W. D. Penny	2	3	0			
H. Tarry	0	6	8			
Capt. W. Symington	15	0	0			
S. Jeffery	1	13	9			
H. Lee and Sons	2	10	0			
Dornbusch & Co.	10	0	0			
F. H. Dancaster	4	10	0			
G. T. Kingston	69	7	9			
G. Meek	4	5	0			
Mrs. Torrens	6	1	0			
H. Mohn	9	4	0			
Freshfield & Co.	1	0	0			
Dr. B. Stewart	12	10	6			
D. J. Rowan	15	0	0			
R. M. Barrington	1	1	0			
W. von Freeden	2	5	6			
Sale of old instruments, &c.	6	19	9			
Subscriptions to D. W. charts	243	2	11			
Do. hourly observations	6	0	0			
				456	9	6
Interest on deposit account				186	11	6
				£12,286	13	5

PAYMENTS.

	£	*s.*	*d.*	£	*s.*	*d.*
Office.						
Salary of Director	800	0	0			
Do. two Clerks	314	14	6			
Office Keeper and Messenger	160	17	9			
				1,275	12	3
Rent of office, &c.	534	12	0			
Fuel and gas	46	1	6			
Furniture and fittings	64	16	4			
				645	9	10
Postage	61	7	6			
Printing, &c.	25	13	8			
Attendance and other contingencies	84	12	1			
				171	13	3
Land Meteorology.						
Expenses at observatories	2,722	9	10			
Computations	783	16	5			
				3,506	6	3
Telegraphy	1,182	4	2			
Inspections, issue of D. W. charts, &c.	479	6	10			
Computations	522	18	4			
				2,184	9	4
Ocean Meteorology.						
Marine Superintendent	400	0	0			
Supply and return of instruments, &c.:						
Admiralty	338	5	7			
Mercantile Marine	419	0	7			
Computations and care of instruments	1,055	4	2			
				2,212	10	4
				9,996	1	3
Cash in hand	11	19	5			
Advance to Valencia Observatory	50	0	0			
Bank of England account	187	11	5			
London and Westminster Bank	2,041	1	4			
				2,290	12	2
				£12,286	13	5

Examined and compared with the vouchers and found correct.

2 June 1874.

(Signed) ROSSE,
R. STRACHEY, } Auditors.

BALANCE SHEET, 31st March 1874.

	£	s.	d.			£	s.	d.	
Subscriptions paid in advance - -	66	15	6		Balance of cash account	2,290	12	2	
Accounts unpaid (estimated) - -	1,104	0	0		Sundry debtors -	45	16	0	
Balance, probable net surplus - -	1,165	12	8						
				£2,336 8 2					£2,336 8 2

Mr. Scott was instructed to forward the accounts to the Treasury in accordance with their letter of Sept. 27, 1873 (Minutes 1873, p. 51).

He was further instructed to forward the Report for 1873 to the Board of Trade for presentation to Parliament.

Submitted—The following return of the comparison between the warnings issued and the weather experienced in 1873 (Minutes, 1872, p. 59; 1873, pp. 7, 20).

RETURN of the Result of the Comparison between the Warnings issued and the Weather experienced in 1873.

Coasts.	Total No. of Orders to hoist and repetitions.	Warnings justified by subsequent Gales, Force 8 and upwards.	Warnings justified by subsequent strong Winds, Forces 6 and 7.	Warnings not justified by subsequent Storms.	Warnings late, Force 9, reached at Two Stations before issue.	Warnings partially late, Force 9, reached at One Station before issue.	Warnings late, owing to Sundays or Telegraphic Errors.	Storms for which no Warning was issued.
Ireland, south -	29	7	11	3	3	4	1	Jan. 13th$_p$ Jan. 18th, Mar. 10th$_p$ Mar. 15th$_p$.
„ east - -	35	12	17	6	—	—	—	Jan. 18th$_p$ Mar. 10th$_p$.
Scotland, east -	24	8	13	3	—	—	—	Jan. 18th, Jan. 28th$_p$ Oct. 6th, Oct. 20th$_s$ Oct. 31st$_p$ Dec. 16th, Dec. 22nd$_s$.
„ west (Clyde)	32	12	11	9	—	—	—	Jan. 13th$_p$ Jan. 18th, Sept. 18th$_p$ Oct. 20th$_s$ Oct. 31st, Dec. 16th, Dec. 22nd$_s$.
England, north-west -	33	18	8	6	—	1	—	Jan. 13th$_p$ Jan. 18th$_p$ Mar. 15th$_p$ Oct. 20th$_s$ Oct. 31st$_p$.
„ west -	28	14	9	5	—	—	—	Jan. 18th, Mar. 10th$_p$ Oct. 31st$_p$.
„ south -	31	19	7	4	—	1	—	—
„ „ (Devon and Cornwall only).	—	—	—	—	—	—	—	Mar. 10th$_p$ Mar. 15th, May 7th, Sept. 15th$_s$.
England, south-east -	17	13	1	3	—	—	—	Mar. 15th$_p$.
„ east -	21	10	8	3	—	—	—	Nov. 22nd, Dec. 16th.
„ „ (N. of Hull).	—	—	—	—	—	—	—	Oct. 10th, Oct. 31st$_p$ Dec. 22nd$_s$.
Totals - -	250	113	85	42	3	6	1	
Per-centages -	—	45·2	34·0	16·8	1·2	2·4	0·4	

In the last column "p" indicates *partially late,* "s" *late owing to Sundays or telegraphic errors.*

If these figures be compared with those for the previous years in which the system has been checked we arrive at the following result:

——	Warnings justified by subsequent Gales.	Warnings justified by subsequent Strong Winds.	Total Success of Warnings.	Warnings not justified by subsequent Weather.
1870	46·7	21·7	68·4	22·4
1871	46	17·7	63·7	22
1872	61	19·5	80·5	11·9
1873	45·2	34·0	79·2	16·8

Mr. Scott was instructed to forward the above return to the Board of Trade for presentation to Parliament.

Reported—That replies to the letter (Minutes, May 18) respecting the results of the Brussels Conference had been received from all the nations to whom it had been addressed, except Denmark.

Reported—That it had been decided by the Sub-Committee for Maritime Meteorology that it was desirable that the Conference should be held in London at the end of August.

Mr. Scott was instructed to issue invitations to the Conference for August 31. The meetings to be held at the Meteorological Office.

Read—A letter from Capt. Toynbee, submitting excellent logs by

Capt. J. T. Holdich, ship "Agra," (Minutes 1872, p. 5).
Capt. D. F. M'Kechnie, barque "Cottica," (Minutes 1873, p. 34).
Capt. J. J. Price, barque "Sorata," (Minutes 1873, p. 61).

Mr. Scott was instructed to convey the thanks of the Committee to the above gentlemen in the usual manner.

Submitted—The Charts for Square III. (Minutes 1873, p. 14.) Mr. Scott reported that the letterpress was nearly ready for publication.

Reported—That at the request of Capt. Hoffmeyer all the information from vessels in the Arctic seas since 1866 had been copied at his expense and sent to Copenhagen.

The official numbers of the logs whence the materials have been extracted are 2518, 2563, 2564, 2607, 2614, 2615, 2655, 2656, 2781, 2782, 2785, 2872, 3007, 3008, 3046, 3053, 3177, 3178, 3229, 3239, 3277, 3278.

The Committee then adjourned.

116, *Victoria Street, June* 22, 1874.

PRESENT:

Major-General Strachey in the Chair.

Mr. De La Rue. | Mr. Galton.

Mr. Gassiot.

The Director was in attendance.

The Minutes of last meeting (June 8) were read and confirmed.

Reported—That the balance (9,000*l.*) of the Parliamentary vote had been received and lodged, as directed at last meeting.

Read—The following letter:—

India Office, June 12, 1874.

SIR,

I AM directed by the Secretary of State for India to acquaint you that a paper has been laid before him by the Reporter on Indian Products, the main scope of which is to show that within a great range of temperature, such as is met with in India, observations made with the wet-bulb hygrometer are less reliable than in a more temperate climate. The paper also suggests a remedy for the evil, a remedy, moreover, which is easy of adoption; but before authorising its circulation among first-class observers in India his Lordship would be glad to ascertain the views of some competent meteorological authority on the desirability of printing and circulating it, and with this view has directed me to request that the Meteorological Committee will furnish him with an opinion on the value of the recommendations contained in the paper referred to.

I am, &c.

(Signed) LOUIS MALLET.

Mr. Scott submitted the following circular of invitation to the proposed Maritime Conference, which was approved:—

Meteorological Office, 116, Victoria Street, London,
Maritime Conference. June, 1874.

SIR,

I HAVE the honour to inform you that it has been decided by the Sub-Committee (consisting of MM. Buys Ballot, Mohn, Mouchez, Neumayer, and myself), appointed by the Permanent Committee of the Vienna Congress, that it is desirable to hold a private conference for the discussion of the subject of Maritime Meteorology in London in the course of this year.

I have received authority from the Meteorological Committee of the Royal Society to place this Office at the service of the Conference for its meetings.

The Conference will assemble on the 31st August, at noon, and will probably last three or four days.

I have the honour to invite you to attend the Conference personally, or to authorize some meteorologist conversant with the subject of Maritime Meteorology to represent you.

Copies of the programme proposed by the Sub-Committee for the deliberations of the Conference are enclosed for yourself and for presentation to other gentlemen in your country interested in the subject.

I have already issued copies of this circular to the gentlemen specified below, and I hope to receive a reply as to your intention to attend, or the contrary, previous to the 1st of August *at latest.*

The Sub-Committee will feel themselves deeply indebted to you if you can procure for them written opinions from men of experience in your country who may not attend the Conference, on any, or all of the several subjects embraced by the programme, and send them to me at this office.

I have, &c.

(Signed) ROBERT H. SCOTT,
Secretary to the Sub-Committee.

Resolved—That Mr. Scott be instructed to communicate with the Board of Trade with the view of obtaining a due representation both of the Board of Trade and of the Admiralty at the Conference on Maritime Meteorology, to be held in London in August next.

SUBMITTED—The following STATEMENT respecting the RECORDS for 1873, 1874, received from the SELF-RECORDING OBSERVATROIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

—	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia	
	April.		March.		April.		April.		March.		March.		April.	
ANEMOGRAPH :—														
Action - - - - - -	Direction. Good.	Velocity. Good.	Direction. Good.	Velocit y. Good excepting very light winds.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Fair.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity Good.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " other causes - -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orientation verified - - - - -	30th.	—	—	—	29th.	—	1st.	—	27th.	—	—	—	1st.	—
No. of errors discovered by subsidiaries -	0	0	0	0	0	1	0	1	0	1	0	0	0	0
" " irregular differences	0	0	1	5	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—														
Greatest difference - - - - -	1·0	1·0	0·0	1·0	0·0	1·0	1·0	1·0	1·0	1·0	0·0	1·0	1·0	1·0
Mean difference irrespective of sign - -	0·0	0·1	0·0	0·3	0·0	0·3	0·2	0·3	0·1	0·0	0·0	0·1	0·2	0·3
Residual difference (— Kew) - - -	0·0	0·0	0·0	—0·1	0·0	+0·1	+0·1	0·0	0·0	0·0	0·0	0·0	—0·1	+0·1
RAIN GAUGE :—														
Action - - - - - - -	Fair.		Fair.		Fair.		Fair.		Fair.		Fair.		Fair.	
Records deficient, due to stoppage of clock -	0		0		0		0		0		0		0	
" " other causes - -	0		0		0		0		0		0		0	
Errors in tabulation - - - - -	0		0		2		0		0		0		2	

BAROGRAPH :—	April.	April.	April.	April.	March.	Glasgow. March.	April.
Action - - - - - - -	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography - - - - - -	Do.	Do.	Do.	Fair.	Fair.	Fair.	Fair.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0
,, ,, failure of light -	0	0	0	0	0	0	0
,, ,, other causes - -	0	0	0	0	0	0	0
No. of errors discovered—							
In entry of standard - - -	0	1	0	5	0	2	0
,, calculating residual correction - -	0	3	0	1	0	0	3
,, applying residual correction - -	0	0	0	6	0	1	11
,, subtraction in subsidiary tables -	0	0	0	0	0	0	0
,, tabulation by subsidiaries - -	0	0	0	0	1	0	0
,, ,, irregular differences -	0	2	0	0	0	0	0
Result of 40 *Remeasurements* :—							
Greatest difference - - - - -	·0030	·0040	·0040	·0040	·0040	·0050	·0050
Mean difference irrespective of sign - -	·0011	·0023	·0014	·0017	·0021	·0024	·0019
Residual difference (— Kew) - - -	—·0007	—·0004	·0000	—·0005	+·0007	—·0021	—·0004
Mean monthly difference between simultaneous barograph and barometer readings - -	·0017	·0023	·0018	·0017	·0025	·0019	·0025

THERMOGRAPH :—	Kew 1873.													
	October.		November.		December.									
Action - - - - - -	Good.		Good.		Good.									
Photography - - - - -	Do.		Do.		Fair.									
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -	0	0	0	0	4 hrs.	4 hrs.								
,, ,, failure of light - -	0	0	0	0	0	0								
,, ,, imperfectly moistened bulbs - -	—	10	—	4	—	—								
,, ,, partially frozen -	—	0	—	0	—	6 hrs.								
,, ,, other causes -	0	0	0	0	4 hrs.	4 hrs.								
No. of errors discovered in entry of standard -	0	0	0	0	0	0								
,, ,, by subsidiary measurements -	0	0	1	0	0	0								
,, ,, by subtraction in do. tables -	0	0	0	0	0	0								
,, ,, detected under glass scale -	3	0	0	0	0	0								
Result of 40 *Remeasurements* :														
Greatest difference - - -	0·10	0·10	0·20	0·10	0·10	0·10								
Mean difference irrespective of sign - -	0·03	0·04	0·06	0·04	0·04	0·04								
Residual difference (— Kew) - - -	—0·02	+0·02	—0·03	+0·01	—0·01	—0·03								
Mean monthly difference between simultaneous thermograph and thermometer readings -	0·10	0·16	0·09	0·12	0·12	0·17								
No. of errors in maxima and minima - -	1	0	1	1	0	0								

Mr. Scott submitted the following memorandum:—

I have to inform the Committee that M. Le Verrier visited the Office on the 18th inst., and had a long conversation with me on the subject of the future organisation of the Meteorological service of the Observatoire de Paris, which, as he informs me, has been entrusted to him. The chief subjects of his communication were Weather Telegraphy and the preparation of Synoptic Weather Charts.

As regards the former, he informed me that he had no wish to propose any alteration in the system of interchange of Daily Telegraphic Reports, which has been for so many years in operation between this Office and his own Observatory.

I myself have no present wish for more reports from France, but a great desire to see greater accuracy infused into the service on the French side.

M. Le Verrier then referred to the former arrangements proposed by him, which had resulted in the preparation of his Atlas des Mouvements Généraux for the years 1864–5 (Minutes, 1867, p. 35; 1868, pp. 5, 38; 1869, p. 37). His letter on the subject is in the Office, and is dated Dec. 9, 1865. In it he proposes that this country, with Russia, the United States, and France, should undertake the preparation of Synoptic Charts of the entire globe, each furnishing such observations as they might possess to the country entrusted with the preparation of the Charts for the district in question, and that France should take the Atlantic Ocean, while this country should take the Indian Ocean.

He did not refer to his former proposal to allot certain gold medals to the captains who kept the best logs.

I replied that this Office wished to preserve its liberty as to its sphere of operations, and was not prepared to bind itself to other offices to issue Charts for any definite district of the earth's surface, that the line of the Committee had already been taken as regards the work of its staff, and it was responsible to Parliament for the expenditure of its grant. I assured him that all the materials in the Office were at his disposal, on the simple condition that he should pay for the time of the clerk or clerks required to make the copies for him, but that the Committee would prefer such an arrangement to the receipt of any number of copies of the published charts in return for a gratis supply of information.

Lastly, I drew his attention to the fact that his name had been mentioned in a recent circular by Prof. Buys Ballot as that of a possible representative for France on the Permanent Committee of the Vienna Congress. With reference to this latter subject, I have received this day the following letter from him:—

MON CHER COLLÈGUE, Londres, 20 Juin 1874.

J'AI écrit à M. Buys Ballot, à l'occasion de la phrase que vous m'avez montrée dans sa circulaire du 4 Juin dernier.

Par le décret du 13 Mai les travaux de Météorologie Internationale sont attribués à l'Observatoire de Paris, que je représente.

J'ai laissé d'abord ces travaux de côté, parcequ'il était dans mes instructions de réorganiser d'abord notre astronomie.

Mais par une lettre en date du 4 Juin dernier, le Ministre me charge de reprendre à leur tour les travaux météorologiques; et il m'invite à m'entendre à ce sujet avec les institutions et les observatoires étrangers autant que je le considérai comme utile à la science.

M. le Président Buys Ballot n'a donc rien à demander au Gouvernement français. J'ai en mains tous les pouvoirs nécessaires pour représenter la France dans ces entreprises internationales.

J'ai cette commission dans mes papiers, et je prie M. Buys Ballot, comme je vous prie vous-même, de considérer cette déclaration comme officielle.

Je suis dès à présent à la disposition du Comité International s'il y trouve quelque utilité.

Veuillez agreez, &c.

Mr. R. H. Scott. LE VERRIER.

I have acknowledged the receipt of this letter, which calls for no further answer from me.

Submitted—A circular from Captain Hoffmeyer, Director of the Meteorological Institute of Copenhagen, stating that he proposed to issue Daily Charts of the district extending from 60° E. to 60° W. long., and from 30° to 75° N. lat., with fortnightly Index Charts, at the cost of 4 francs per month, exclusive of postage. The present issue to be for the three months Dec. 1873–Feb. 1874, as an experiment.

Captain Hoffmeyer stated that he could only receive subscriptions from central offices, as distinguished from private parties.

Mr. Scott was instructed to subscribe for 25 copies, and to see if he could dispose of them in this country.

Reported—That Mr. Valentine Sandiford had been appointed a temporary clerk at the salary of 23*s*. per week, to fill the vacancy made by Mr. Salmon's retirement.

Submitted—The Quarterly Weather Report for 1872, Part II.

A cheque for 10*l*. for J. S. Harding for petty cash was drawn.

The Committee then adjourned.

116, *Victoria Street*, *June* 29, 1874.

PRESENT:

Mr. Galton in the Chair.

Mr. De La Rue.
Captain Evans.
Mr. Gassiot.
The Earl of Rosse.
Sir E. Sabine.
Major-General Smythe.
Major-General Strachey.

The Director was in attendance.

The Minutes of last meeting (June 22) were read and confirmed.

Reported—That the invitations to the Maritime Conference had been issued to the following gentlemen:—

Austria - -	Dr. C. Jelinek, Director K. K. Central-Anstalt für Meteorologie.
	Dr. C. von Littrow, President Adria Commission.
	Lieut. R. Müller, Director K. K. Hydrographische Amt. Pola.
Belgium -	M. E. Quetelet, Brussels Observatory.
Bengal - -	H. F. Blanford, Meteorological Reporter.
Canada - -	G. T. Kingston, M.A., Superintendent of Meteorological Organization.
China - -	J. D. Campbell, Secretary to Commission of Maritime Customs.
Denmark -	Capt. N. Hoffmeyer, Director Meteorological Institute.
	Commodore Rothe, Hydrographer.
France - -	The Minister, Marine et Colonies.
	The Minister, Public Instruction.
	Admiral Duperré, Min. de la Marine.
	Capt. des Noyers, " "
	Capt. Le Gras, Depôt des Cartes et Plans.
	M. A. De la Marche, " "
	M. Le Verrier, Observatoire de Paris.
	M. C. Ste. Claire Deville, Inspector Met. Stations.
	M. H. Marié-Davy, Observatoire de Montsouris.
Germany -	Herr H. W. Dove, Berlin.
	Herr W. H. v. Freeden, Deutsche Seewarte.
	Dr. G. Neumayer, Hydrographer, Berlin.
	Dr. H. A. Meyer, Commission for investigating the German Seas.
Great Britain -	The Board of Trade.
	The Admiralty.
	President, Meteorological Society.
	President, Scottish Meteorological Society.
	A. G. Findlay, Esq.
Holland -	Prof. Buys Ballot, Meteorological Institute, Utrecht
Italy -	The Minister, Marine.
	M. G. Cantoni, Ministry of Agriculture.
Mauritius -	C. Meldrum, M.A., Secretary Meteorological Society
Norway -	M. H. Mohn, Director Meteorological Institute.
Portugal -	M. Fradesso da Silveira, Observatory, Lisbon.
Russia - -	Prof. H. Wild, Central Physical Observatory.
	Baron von Wrangel, Hydrographer Nicolaieff.
Spain - -	Dr. A. Aguilar, Madrid Observatory.
	M. C. Pujazon, Marine Observatory, San Fernando
Sweden - -	Prof. R. Rubenson, Meteorological Institute.
Turkey - -	M. A. Coumbary, Meteorological Observatory, Constantinople.
United States -	Capt. Davis, U.S. Naval Observatory.
	Commodore Wyman, Superintendent Bureau of Navigation.
	Brig.-Gen. Myer, Chief Signal Officer.

Reported—That the resolution of the Committee passed at last meeting had been communicated to the Board of Trade.

Mr. Scott drew the attention of the Committee to the discussions which had taken place at the Vienna Congress on the subject of the creation of an International Meteorological Institution, to be supported by contributions from the several governments, and stated that as he had to forward to the permanent committee of the Congress his opinion as to the practicability of such a step, he wished to know whether or not the Committee would approve of his stating his conviction that such a measure was for the present impracticable.

The following resolution was adopted :—

That the Meteorological Committee do not think that it would be of any practical utility at present to bring under the notice of the British Government a proposal for the establishment of an International Meteorological Institution.

The following cheques for June were drawn :—

					£	s.	d.
For Office :							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					*20	3	4
J. S. Harding, sen.					†9	12	6
T. D. Bell					†7	0	0
C. W. Jacques, Rent for Quarter					133	13	0
E. Stanford, Books					4	10	0
For Observatories ; Quarterly Allowances, &c. :							
D. Thomson, Aberdeen					‡61	17	6
T. R. Robinson, Armagh		40	14	0			
„ expenses for quarter		9	2	4			
					49	16	4
W. P. Dymond, Falmouth					‡65	12	6
R. Grant, Glasgow		‡61	17	6			
„ less waxed paper		9	10	0			
					52	7	6
H. Williams, Holyhead					4	2	7
S. Jeffery, Kew		62	10	0			
„ Examination of Records		100	0	0			
„ waxed paper (Glasgow)		9	10	0			
					172	0	0
C. Clouston, Orkney					2	10	0
E. J. Purbrick, Stonyhurst					‡49	7	6
T. Kerr, Valencia		56	16	7			
„ salary for June		20	16	8			
					77	13	3
G. T. Watson, Yarmouth					3	18	6
R. and J. Beck, zinc plates		10	10	3			
„ „		7	12	6			
					18	2	9
J. Driscoll, rent at Valencia					25	0	0
Hopkin and Williams (chemicals)					6	18	8
Malby and Sons, anemometer forms		6	5	0			
„ rainfall diagram		5	10	0			
					11	15	0
R. H. Curtis	Computations, &c.				12	10	0
A. J. Rigby					§12	10	3
C. H. Thompson					†5	15	0
C. Stodart					†10	10	0
J. A. Curtis					8	6	8
R. Sargeant					†5	0	0
For Telegraphy ; Quarterly Allowances, &c. :—							
Postmaster-General, October–December 1873					391	18	3
N. J. Holmes, Scilly Co., April–May		6	14	6			
„ Shetland Co., to September 1873		5	12	6			
					12	7	0
Carried forward					£1,301	11	5

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* Including allowance for extra attendance.

† Five weeks to the 27th.

‡ 12*s.* 6*d.* deducted for forms supplied.

§ 6½ weeks to the 27th.

					£	s.	d.
Brought forward					1,301	11	5
For Telegraphy, &c.—*continued.*							
H. Todd, Cambridge					3	19	0
J. Costello, Dover					3	7	6
J. Tilston, Holyhead					3	7	0
G. Mitchell, Kingstown					3	6	3
F. Gaster, London					3	5	0
W. D. Penny, Nairn					4	4	6
E. J. Lowe, Notts					3	18	0
J. Lucas, Oxford					3	6	0
J. Merrifield, Plymouth					3	5	0
W. Sandford, Portishead					4	1	1
W. Thomas, Scilly					4	5	4
W. Lawrence, Shetland					3	5	0
J. Smith, Stornoway					3	5	0
J. Trotter, Thurso					3	6	1
J. Sinclair, Wick					3	5	0
G. T. Watson, Yarmouth					3	6	6
C. Wakefield, York					3	6	0
V. Brooks, Day and Son, D. W. Report					11	16	11
R. H. Scott, inspections					1	15	11
Wightman & Co., printing, &c.					5	10	0
F. Gaster	Computations, &c.				14	3	4
W. L. Dallas					10	12	4
F. Brodie					9	14	2
For Ocean Meteorology:—							
H. Toynbee, Marine Superintendent					33	6	8
L. P. Casella, "A" rain gauges, &c.					22	12	6
Elliott Brothers, repairing "A" aneroids					7	0	6
Negretti and Zambra, "A" thermometers					7	10	0
F. Pastorelli ,,					12	18	8
J. H. Woodstock, packing cases					2	10	0
S. Jeffery, "A" verifications		1	0	0			
,, "M.O." ,,		5	17	0			
					6	17	0
P. Adie, standard barometer		15	10	0			
,, shipping do. to Batavia		2	4	6			
					17	14	6
D. McGregor & Co., Glasgow agents					2	10	0
R. Strachan, Aneroid barometer					2	10	0
H. Toynbee, barometer					2	0	0
R. Strachan	Computations, &c.				*20	0	0
C. Harding					16	6	2
W. G. James					8	6	8
T. E. Allen					8	6	8
J. W. McVeagh					5	15	0
For Office Expenses:—							
J. S. Harding, jun., on account					100	0	0
Total					£1,691	6	8

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* Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, July* 13, 1874.

PRESENT:

The Earl of Rosse in the Chair.
Mr. De La Rue. | Sir E. Sabine.
Sir C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (June 29) were read and confirmed.

Submitted—The following letters (Minutes, June 22) :—

M. 9390.
M.O. 1544.

SIR, Board of Trade, July 8, 1874.

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 26th ult., relating to the attendance of a representative of this Board at a private conference to be held in London for the sake of discussing the subject of Maritime Meteorology.

In reply, I am directed by the Board of Trade to forward herewith, for your information, copies of letters which this Board have addressed to Captain Toynbee and the Admiralty on the subject.

I am, &c.
(Signed) THOMAS GRAY.

The Director,
Meteorological Office.

M. 9390.

SIR, Board of Trade, July 6, 1874.

I AM directed by the Board of Trade to transmit herewith copy of a letter, with a programme enclosed, addressed to this Board by the Director of the Meteorological Office, inviting the attendance of a representative at a private conference to be held in London on the subject of Maritime Meteorology.

I am directed to state for the information of the Lords Commissioners of the Admiralty that this Board intend to nominate a representative, and would be glad if a representative of the Board of Admiralty were also appointed, at the same time wishing it to be understood that the meeting is quite unofficial, and is merely held by men of science for the sake of discussing the subject.

I am, &c.
(Signed) THOMAS GRAY.

The Secretary, Admiralty.

M. 9390.

SIR, Board of Trade, July 6, 1874.

WITH reference to a letter received from the Director of the Meteorological Office as to the appointment of a representative of this Board at a private conference to be held in London for the sake of discussing the subject of Maritime Meteorology, I am directed by the Board of Trade to inform you that this Board have been pleased to nominate you as their representative at the forthcoming meeting.

You will of course be careful not to pledge the Board of Trade to anything whatever.

I am, &c.
(Signed) THOMAS GRAY.

Captain Toynbee.

It was resolved—That 80*l.* be placed at Mr. Scott's disposal *pro tempore*, to entertain the visitors to the Maritime Conference.

Submitted—The following letter :—

M. 9547.
M.O. 1543.

SIR, Board of Trade, July 8, 1874.

I AM directed by the Board of Trade to forward herewith copy of a despatch from the Government of New Zealand, with enclosure, relating to the establishment in the colony of a system of Storm Warning Signals and Weather Forecasts, which has been forwarded to this Board by the Agent General for New Zealand.

I am to state that this Board would be glad of your assistance to enable them to return a suitable answer to the request conveyed therein.

I am, &c.
(Signed) THOMAS GRAY.

The Director,
Meteorological Office.

Sir,
Colonial Secretary's Office, Wellington, April 9, 1874.

I have the honour to inform you that the Government have decided to establish a system of Storm Warning Signals and Weather Forecasts, and that they are now making arrangements to that effect which will be carried out as far as possible upon similar principles to those under the superintendence of the Board of Trade.

The Government being desirous of obtaining all possible information on the subject, I have now to request that you will inform Mr. Gray, the Assistant Secretary of the Marine Department of the Board, of the decision above referred to, and ask him if he will be so good as to suggest what standard work, in addition to the accompanying list,* it would be best to procure in furtherance of this object, and also if he will forward to you copies of any printed manual or instructions on this subject that may have been issued to their officers by the Board of Trade.

I have also to request that you will procure and forward by the return mail the books suggested by Mr. Gray, as well as those mentioned in the list herewith.

I am, &c.
(Signed) Daniel Pollen.

The Agent General for New Zealand,
London.

Mr. Scott was instructed to prepare a reply for the consideration of the Committee.

Reported—That the resolution passed at last meeting with reference to the proposed International Institution had been communicated to Professor Buys Ballot (Letter 1387).

Reported—That Mr. Beckley having recovered from a recent severe illness had been permitted by his doctor to undertake his annual tour of inspection of the observatories. Mr. Scott was instructed to direct him to commence it.

A cheque for 203*l.* 5*s.* 6*d.* was drawn in favour of R. W. Munro in payment for instruments sent to Dr. Kingston.

The Committee then adjourned.

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* List not printed here.

116, *Victoria Street, July* 27, 1874.

PRESENT:

Major-General Strachey in the Chair.
Mr. De La Rue. | Sir E. Sabine.
Sir C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (July 13) were read and confirmed.

The following reply to the letter of the Board of Trade (M. 9547), read at last meeting, was adopted :—

SIR,

IN reply to your letter (No. 9547) of the 8th instant, I am instructed by the Committee to inform you that they have received with great interest your communication to the effect that the Government of New Zealand are about to establish a system of Storm-Warning Signals and Weather Forecasts, a step which cannot fail to be of great benefit to the Colony.

The Committee are at all times ready to furnish any particulars as to their procedure which may be required. In this case the list of books embodied in the letter of which you have furnished a copy contains almost every official publication which has emanated from this Office bearing on the subject.

In regard of it I would only remark that the Annual Report for 1873 has not yet been issued, and that the Quarterly Weather Report for 1871 has only just been signed for press, while that for 1873 is not complete yet.

As to additional works on the subject, I would suggest—

Report of the Proceedings of the Meteorological Congress at Vienna, 1874.
Report to the Committee on the Meteorology of the North Atlantic, by Captain H. Toynbee.
Report to the Committee on the Use of Isobaric Curves, by Captain H. Toynbee.
Notes on the Form of Cylones in the Southern Indian Ocean, by C. Meldrum, M.A., F.R.A.S.
Meteorographica, by F. Galton, F.R.S. (Macmillans).
Parliamentary Papers (No. 504, 1871 ; 152, 1873 ; 233, 1874), being the Comparisons between the Warnings issued and the Weather experienced in these Islands in the years 1870–1–2–3.

I have the honour to enclose herewith copies of certain circulars, papers, &c. which I have from time to time published, and, in addition, an incomplete proof copy of a Report on Weather Telegraphy and Storm Warnings, which is now in the press, but which will be found to contain some valuable results of experience on the subject. I furthermore append specimens of the forms, &c. used by us at our Reporting Stations and at this Office, together with copies of our Lithographed Daily Weather Reports, with weekly summary and monthly sheet of omissions and errata.

List of Papers herewith.

Report on Strong Winds and Barometer Differences, *with Tables*, unpublished. Six copies.
Circular Telegraphic Weather Intelligence. Six copies.
„ Board of Trade, No. 717. One copy.
On the Connexion between oppositely disposed Currents of Air, and the Weather subsequently experienced, by R. H. Scott. One copy.
On some Results of Weather Telegraphy, by R. H. Scott. One copy.
On recent Progress in Weather Knowledge, by R. H. Scott. Two copies.
On the Principles of Weather Forecasts and Storm Prevision, by R. Strachan. Two copies.

Of works published abroad I would suggest the titles of—

The Foretelling of the Weather, by F. H. Klein, translated by A. Adriani. (London: Pardon, Paternoster Row), 1863. (This book may possibly be obtainable from Professor Buys Ballot, of Utrecht.)
The Reports, &c. of Chief Signal Officer, U.S., for 1872–73. These may be obtained by application to Brigadier General Myer, Washington.
Results of an Examination of the U.S. War Maps for 1872–73, by Elias Loomis ; and Journ. Science and Art, Vol. viii., July 1874.

If there be any point connected with the subject on which fuller information is required, I am instructed to inform you that I shall be most happy to supply such, as far as our experience will admit.

The following reply to the letter of the India Office (Minutes, p. 51) was adopted :—

SIR,

July 27, 1874.

IN reply to your letter of June 12th I am instructed by the Meteorological Committee to inform you that the subject of the unsatisfactory nature of the instrumental appliances for the determination of the hygrometrical condition of the air under circumstances as well of extreme heat and dryness as of severe cold is universally recognized by physicists and meteorologists.

The question met with special attention at the Meteorological Conference at Leipzig in 1872, and also at the Congress at Vienna in 1873, but without receiving as yet a solution, and the subject of Dr. Forbes Watson's paper is therefore one which is of great interest to the science of Meteorology. At the same time it appears that the author is himself dissatisfied with the crucial experiments which he employed to test the accuracy of his reasoning, for he says at p. 60 of the MS., "During one "month's observations in Scinde Daniell's hygrometer was used, whilst simultaneously experiments "were made for the purpose of ascertaining by the chemical method the quantity of moisture "contained in the air." Unhappily the results of the latter method, which alone can finally decide the point, were vitiated by the use of fused chloride of calcium* as the absorbent * * * * . Although about 90 experiments were fully carried out in this way the results have been rejected *in toto.*

It appears to the Committee, therefore, that Dr. Watson's conclusions are not based on independent experiments of such an exhaustive character as would justify the Government in going to the expense of printing and circulating the paper, and they would suggest that the document itself, or its results in an abridged form, should be submitted to a Scientific Society. If accepted by such a body and printed by it the subject would be brought at once to the cognizance of scientific men. At the same time I am to say that the use of an artificial circulation of air to increase evaporation is a well-known practice in Italy and elsewhere, and is especially noticed in the Report of the Vienna Congress at pp. 58 and 84.

I am to inform you that, in the opinion of the Committee, the subject of the accuracy of hygrometrical observations in tropical climates is one eminently deserving of investigation, and, as the experiments do not require expensive or complicated apparatus, it would seem probable that they might be carried on at some of the stations in the interior of India, and that thereby the question which Dr. Watson has endeavoured to solve might meet with the attention which it deserves and which it cannot receive in the open air of Europe owing to the absence of extreme conditions of climate, as regards heat and dryness. It would, however, be quite possible to produce artificially the conditions of extreme heat and dryness in the laboratory, and to obtain thereby experimental results which could be used to continue direct Meteorological Observations in climate such as that of India. I may say that such experiments could be very well conducted at Kew, and would probably not entail on the India Office a greater expense than about 100*l.* or 150*l.*

Read the following letter :—

M. 10,577.
M. O. 1647.

SIR, Board of Trade, July 27, 1874.

WITH reference to this Board's letter of the 8th inst., relative to the appointment of representatives of the Board of Trade and Admiralty at the private Conference to be held in London on the subject of Maritime Meteorology, I am directed by the Board of Trade to inform you that Captain Toynbee has accepted his appointment as a representative of this Board, and that Rear-Admiral M. S. Nolloth has been named as the representative of the Admiralty.

I am, &c.
R. H. Scott, Esq. (Signed) HENRY G. CALCRAFT.

Mr. Scott reported that the following gentlemen had *already* been announced as intending to take part at the Maritime Conference :—

England - -	Rear-Admiral Nolloth, Captain Toynbee, and Dr. Mann.
France - -	MM. Delamarche and C. Ste. Claire Deville.
Germany - -	MM. Neumayer and von Freeden.
Holland - -	MM. Buys Ballot and Cornelissen.
Italy - -	Com. St. Canevaro.
Norway - -	Professor Mohn.
Portugal - -	M. De Brito Capello.
Spain - -	M. Pujazon.
Turkey - -	Hobart Pasha.

He expected representatives from Denmark and Russia, in addition to the foregoing.

Read—A letter from Captain Toynbee, submitting excellent logs by—

Captain John Bruce, ship "South Australian" (Minutes 1873, p. 40).
Commodore J. G. Goodenough, H.M.S. "Pearl" (Minutes 1874, p. 22). Log kept by Navigating-Lieutenant H. Hosken.
Captain J. M. Donald Gray, barque "Speranza" (Minutes 1873, p. 61).
" G. H. Jones, ss. "Niger" (Minutes 1873, p. 61).
" R. D. Lunham, ss. "Charles Howard" (Minutes 187~~3~~4, p. 22).
" C. W. Pearson, ss. "Strathclyde" (Minutes 1874, p. 11).
" W. Symington, ss. "Hankow" (Minutes 1874, p. 22).

Mr. Scott was instructed to convey the best thanks of the Committee to the above gentlemen.

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* *i.e.* instead of chloride of calcium in the porous condition.

SUBMITTED.—The following STATEMENT respecting the RECORDS for April 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

Points noticed at Kew.	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
ANEMOGRAPH :—														
Action			Good.	Good, excepting for light winds.					Good.	Good.	Good.	Good.		
Records deficient, due to stoppage of clock			0	0					0	0	0	0		
" " other causes			0	0					0	0	0	0		
Orientation verified			22nd.	—					21st.	—	—	—		
No. of errors discovered by subsidiaries			0	0					0	0	0	0		
" " irregular differences			6	2					0	0	0	0		
Result of 40 *Remeasurements :—*														
Greatest difference			1·0	1·0					1·0	1·0	1·0	1·0		
Mean difference irrespective of sign			0·1	0·3					0·0	0·2	0·1	0·2		
Residual difference (— Kew)			+0·1	+0·1					0·0	—0·1	0·0	+0·1		
RAIN GAUGE :														
Action			Fair.						Fair.		Good.			
Records deficient, due to stoppage of clock			24 hrs.						0		0			
" " other causes			0						0		0			
Errors in tabulation			0						0		0			
BAROGRAPH :—														
Action									Good.		Good.			
Photography									Do.		Do.			
Records deficient, due to stoppage of clock									0		0			
" " failure of light									0		0			
" " other causes									0		0			
No. of errors discovered—														
In entry of standard									0		0			
" calculating residual correction									0		0			
" applying residual correction									0		0			
" subtraction in subsidiary tables									0		0			
" tabulation by subsidiaries									0		0			
" " irregular differences									0		0			
Result of 40 *Remeasurements :—*														
Greatest difference									·0040		·0050			
Mean difference irrespective of sign									·0019		·0022			
Residual difference (— Kew)									—·0001		+·0019			
Mean monthly difference between simultaneous barograph and barometer readings									·0026		·0019			

THERMOGRAPH :—	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Action - - - - -					Good.				Good.					
Photography - - - - -					Do.				Fair.					
Records deficient, due to stoppage of clock -					0	0			0	0				
„ „ failure of light -					0	0			11	0				
„ „ imperfectly moistened bulbs - -					—	0			—	0				
„ „ partially frozen bulbs -					—	0			—	0				
„ „ other causes - -					0	0			4	0				
No. of errors discovered in entry of standard -					0	0			0	0				
„ „ by subsidiary measurements -					0	0			0	0				
„ „ of subtraction in do. tables -					0	0			0	0				
„ „ detected under glass scale -					0	0			0	0				
Result of 40 *Remeasurements :—*														
Greatest difference - - - -					0·10	0·20			0·20	0·20				
Mean difference irrespective of sign - -					0·05	0·05			0·06	0·05				
Residual difference (—Kew) - - -					−0·01	+0·02			−0·01	−0·03				
Mean monthly difference between simultaneous thermograph and thermometer readings -					0·06	0·06			0·11	0·15				
No. of errors in maxima and minima - -					0	0			0	0				

THERMOGRAPH :—			March 1874.								February. Kew.		March 1874.	
Action - - - - -			Good.		Good.		Good.		Good.		Good.		Good.	
Photography - - - - -			Do.		Do.		Do.		Do.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -			0	0	0	0	0	0	0	0	0	0	0	0
„ „ failure of light -			0	0	0	0	0	0	0	0	0	0	0	0
„ „ imperfectly moistened bulbs - -			—	0	—	0	—	13 hrs.	—	0	—	3 hrs.	—	10 hrs.
„ „ partially frozen -			—	27 hrs.	—	28 hrs.	—	1 hr.	—	14 hrs.	—	18 hrs.	—	11 hrs.
„ „ other causes - -			0	0	0	0	0	0	0	0	0	0	0	0
No. of errors discovered in entry of standard -			0	1	0	0	0	0	0	0	0	0	1	1
„ „ by subsidiary measurements -			0	0	0	0	1	0	0	0	2	2	0	0
„ „ by subtraction in do. tables -			0	0	0	0	1	0	0	0	3	5	0	1
„ „ detected under glass scale -			0	0	0	0	0	0	0	0	0	0	1	1
Result of 40 *Remeasurements :—*														
Greatest difference - - - -			0·20	0·20	0·20	0·20	0·20	0·20	0·20	0·10	0·10	0·20	0·20	0·20
Mean difference irrespective of sign - -			0·06	0·05	0·04	0·08	0·07	0·09	0·06	0·05	0·04	0·04	0·05	0·09
Residual difference (— Kew) - - -			+0·05	0·00	−0·02	−0·07	−0·06	−0·06	0·00	+0·01	−0·03	0·00	−0·01	+0·02
Mean monthly difference between simultaneous thermograph and thermometer readings -			0·12	0·12	0·06	0·06	0·08	0·07	0·13	0·15	0·11	0·12	0·12	0·13
No. of errors in maxima and minima - -			0	0	0	0	0	3	0	0	1	0	5	1

SUBMITTED.—The following STATEMENT respecting the RECORDS for May 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
ANEMOGRAPH:—														
Action - - - - -	Good.	Good.	Good.	Good, excepting for light winds.	Good.	Good.	Good.	Fair.			Good	Good	Good	Good
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0	0			0	0	0	0
" " other causes -	0	0	0	0	0	0	0	0			0	0	0	0
Orientation verified - - - -	29th	0	—	—	12th	—	1st.	—			—	—	4th	—
No. of errors discovered by subsidiaries -	0	0	0	0	0	1	0	0			0	0	0	0
" " irregular differences	0	0	0	0	0	0	0	0			0	0	0	0
Result of 40 *Remeasurements*:—														
Greatest difference - - - -	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0			1·0	1·0	1·0	1·0
Mean difference irrespective of sign -	0·0	0·2	0·1	0·2	0·0	0·3	0·2	0·3			0·2	0·3	0·1	0·3
Residual difference (—Kew) - - -	0·0	0·0	0·0	+0·1	0·0	+0·1	—0·1	+0·1			—0·1	+0·1	0·0	+0·2
RAIN GAUGE.														
Action - - - - -	Fair.		Fair.		Fair.		Fair.				Good.		Fair.	
Records deficient, due to stoppage of clock -	0		0		0		0				0		0	
" " other causes -	0		0		0		0				0		0	
Errors in tabulation - - - -	0		0		0		0				0		4 errors in dating curves.	
BAROGRAPH:—			Armagh not ready.											
Action - - - - -	Good.				Good.		Good.		Good.		Good.			
Photography - - - - -	Do.				Do.		Do.		Fair.		Do.			
Records deficient, due to stoppage of clock -	0				0		0		0		0			
" " failure of light -	0				0		0		0		0			
" " other causes -	0				0		0		2 hrs.		0			
No. of errors discovered—														
In entry of standard - - -	0				1		1		0		0			
" calculating residual correction -	0				0		0		0		0			
" applying residual correction -	0				0		0		0		0			
" subtraction in subsidiary tables -	0				0		0		0		0			
" tabulation by subsidiaries -	0				0		0		0		1			
" " irregular differences -	0				0		0		0		0			
Result of 40 *Remeasurements*:—														
Greatest difference - - - -	·0040				·0040		·0040		·0040		·0060			
Mean difference irrespective of sign -	·0013				·0016		·0017		·0017		·0020			
Residual difference (— Kew) - - -	— ·0004				+ ·0002		— ·0010		— ·0007		— ·0010			
Mean monthly difference between simultaneous barograph and barometer readings -	·0013				·0013		·0017		·0021		·0017			

The following cheques for July were drawn:—

		£	s.	d.
For Office:				
R. H. Scott	Salaries and wages	66	13	4
J. S. Harding, jun.		19	3	4
J. S. Harding, sen.		*7	14	0
T. D. Bell		*5	12	0
For Observatories:				
R. H. Curtis	Computations, &c.	12	10	0
A. J. Rigby		*7	14	0
C. H. Thompson		*4	12	0
C. Stodart		*8	8	0
J. A. Curtis		8	6	8
R. Sargeant		*4	0	0
Rev. T. Kerr, Valencia		20	16	8
R. Beckley, on account		15	0	0
For Telegraphy:				
F. Gaster	Computations, &c.	†17	7	6
W. L. Dallas		†9	15	10
F. Brodie		†8	5	5
For Ocean Meteorology:				
H. Toynbee, Marine Superintendent		33	6	8
R. Strachan	Computations, &c.	‡20	0	0
C. Harding		†15	8	8
W. G. James		8	6	8
T. E. Allen		8	6	8
J. W. McVeagh		*4	12	0
On Account:—				
R. H. Scott, inspections		50	0	0
J. S. Harding, jun., office expenses		100	0	0
Total		£455	19	5

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* Four weeks to the 25th.
† Including allowance for extra attendance.
‡ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, November* 2, 1874.

PRESENT:

Mr. Galton in the Chair.

Mr. De La Rue.
Rear-Admiral Richards.
Sir E. Sabine.
Major-General Strachey.
Sir C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (July 27) were read and confirmed.

Read—The following Report:—

GENTLEMEN, Meteorological Office, 22nd September 1874.

I HAVE the honour to inform you that the Conference for Maritime Meteorology (Minutes 2nd February and 29th June 1874) has concluded its sittings, and the report of the proceedings having been submitted to the Permanent Committee (appointed by the Meteorological Congress of Vienna in 1873), the resolutions will, with your permission, be published by the Meteorological Office as soon as possible.

The Conference consisted of 25 members, belonging respectively to every maritime country of consequence in Europe, except Sweden and Turkey. India and China were also represented. The following is the list of the gentlemen who attended:—

LIST of PERSONS present at the CONFERENCE.

Austria -	R. Müller, Director of the Imperial Royal Hydrographic Office at Pola.
Belgium	F. van Rysselberghe, Navigation School, Ostend.
Bengal -	H. F. Blanford, Secretary Meteorological Committee, Calcutta.
China -	J. D. Campbell, Inspectorate General of Maritime Customs, London.
Denmark	Capt. N. Hoffmeyer, Director of the Royal Danish Meteorological Institute at Copenhagen.
France -	A. De la Marche, Ministry of Marine, Paris.
	C. Sainte Claire Deville, Inspector of French Meteorological Stations, Paris.
Germany	W. H. von Freeden, Director of the "Deutsche Seewarte" at Hamburg.
	H. A. Meyer, Commissioner for investigating the German Seas, Kiel.
	G. Neumayer, Hydrographer, Berlin.
	Capt. Stempel, Imperial Navy.
Great Britain	R. J. Mann, M.D., President of the Meteorological Society, London.
	Rear-Admiral M. F. Nolloth (Representative of the Admiralty).
	R. H. Scott, F.R.S., Director of the Meteorological Office, London.
	Capt. H. Toynbee, Marine Superintendent, Meteorological Office (Representative of the Board of Trade).
Holland	Prof. Buys Ballot, Director of the Royal Meteorological Institute of the Netherlands, Utrecht.
	Capt. J. E. Cornelissen, Marine Superintendent, &c.
Italy -	Capt. N. Canevaro, Naval Attaché to the Royal Italian Legation, London.
Norway	H. Mohn, Director of the Royal Norwegian Meteorological Institute at Christiania.
Portugal	J. C. de Brito Capello, Director of Nautical and Meteorological Observations; Observatory of the Polytechnic School, Lisbon.
Russia -	A. Moritz, Director of the Observatory at Tiflis.
	Capt. M. Rikatcheff, Central Physical Observatory, St. Petersburg.
Spain -	Capt. J. N. Montojo, Spanish Navy.
	„ C. Pujazon, Director of the Marine Observatory, San Fernando.

Professor Buys Ballot was elected President, and Captain Hoffmeyer and myself secretaries. It met on the 31st ultimo, and it at once subdivided itself into two sub-committees, dealing with the various questions connected with 1, "Observations," and 2, "Discussions." Each sub-committee held four sittings, and at the closing meeting of the Conference the several resolutions framed by the sub-committees were adopted, in most cases unanimously.

The Conference completed its labours on the afternoon of the 2nd instant and on Thursday (3rd), by kind permission of the Astronomer Royal, the members went to Greenwich in the morning, where they were conducted over the Magnetical and Meteorological Department by Mr. Glaisher. In the afternoon they spent some hours at Kew Observatory, where they were received by Mr. Jeffery, and in the evening the whole party were entertained at dinner, at the Star and Garter.

On Friday several members availed themselves of the great courtesy of the War Office, and repaired to Woolwich, where they were conducted over the Arsenal by Colonel Field and other officers connected with that Department. Finally, on Saturday, they inspected the Meteorological Office, where the meetings of the Conference had been held, and paid special attention to the arrangements here existing for reproducing the records of the photographic and other instruments.

I may here mention that the members expressed themselves much gratified at the arrangements made for their convenience at this Office, and, moreover, that I consider that the results arrived at are very satisfactory and will, I hope, settle the subject of Maritime Meteorology for many years to come. Also that the Permanent Committee at their meeting at Utrecht, which has just come to an end, have expressed themselves as perfectly satisfied with the action taken by the Conference.

Your obedient servant,
ROBERT H. SCOTT,
Director.

Mr. Scott further informed the Committee that the Report of the proceedings of the above Conference was in type, and would shortly be published. The resolutions of the Conference had already been published in the "Times" and in "Nature."—Approved.

Submitted—The following Report:—

I HAVE the honour to report that on the 9th of September I repaired to Utrecht to attend the meeting of the Permanent Committee appointed by the Vienna Congress. The meetings lasted from the 11th to the 14th inclusive, the members present being MM. Buys Ballot (the President), Bruhns, Jelinek, Mohn, Wild, and myself. M. Cantoni was unable to attend.

The report of our proceedings will be published as soon as possible, and I shall therefore content myself with informing you at once of the matters which I have to bring to your knowledge, and possibly to request for action.

Synchronous Observations.—The observations taken in accordance with Gen. Myger's proposal (Minutes, 1873, pp. 70, 71) at 0h. 43m. Greenwich time, for a selected number of stations in Europe, Asia, &c., are to be published by Prof. Buys Ballot, beginning with January 1st, 1875.

Publication of Observations.—It is recommended that in every country the actual observations made at the stations of the second order should be published in a definite form, giving the following information:—*Pressure; Temperature (Max. and Min.); Absolute and Relative Humidity; Wind, Direction and Force; Cloud; Rain; Remarks.*

I need hardly remind you that in this country nothing but *monthly* or *weekly means* have hitherto been published from stations of the second order, *e. g.*, by the Registrars-General in England or Scotland, or by the Scottish Meteorological Society.

The Permanent Committee request that the Meteorological Committee will publish for the United Kingdom such tables for 15 stations at least, the tables to be monthly, even if published at quarterly intervals.

This recommendation has no reference to first-class observatories, such as our self-recording observatories.

With reference to these latter, it is declared to be desirable that the hourly readings should be copied and rendered accessible to meteorologists, and that in addition to "wet bulb" readings, the *hourly values of absolute and relative humidity should be given.*

Telegraphic Code.—A scheme for a uniform telegraphic code was adopted, in so far as the same is possible, owing to the differences between the metric and English units of scale.

The remaining resolutions refer to matters of detail of organization, &c. which need not be brought before your notice until the full report is published.

As the Permanent Committee requires funds in order to carry on its business, I shall have to ask you for a sum not exceeding 20*l.* per annum as the contribution for this country. I have already paid 1*l.* 7*s.* 6*d.* as my share of the expenses incurred up to September last.

Lastly, I have to inform you that I have been requested to act as Secretary to the Permanent Committee until the meeting of the next Congress, which is to be held in the year 1876, as already arranged at the Vienna meeting, and that I have accepted the post. Accordingly, all the action of the Permanent Committee as regards the organization of Meteorology in Europe will be brought under your cognizance.

I venture, therefore, to hope that you will not disapprove of the action I have taken.

ROBERT H. SCOTT.

Approved.

Mr. Scott reported that on July 28 he had had a visit from Mr. P. L. Sclater, F.R.S., Private Secretary to the President of the Local Government Board, with reference to the possibility of obtaining for that Board Meteorological Tables from the Meteorological Office, to be issued in lieu of the tables hitherto published by the Registrar General, whose office has now been placed in connexion with the Local Government Board.

He, Mr. Scott, had assured Mr. Sclater of the readiness of the Committee to furnish any information in their power to the Local Government Board, and had drawn his attention to the correspondence which had passed on the subject of these very returns between the Treasury, the Board of Trade, the Registrar General, and himself (Minutes, 1872, pp. 63, 73, 86, 87, and 1874, pp. 1, 2). Mr. Sclater had postponed the further consideration of the question until the present month (November).

Mr. Scott's action was approved, and he was instructed to obtain further information on the subject.

Read—The following letter:—

M.O. 2292.

MONSIEUR LE DIRECTEUR, Paris, le 28 Octobre 1874.

LA SOCIÉTÉ FRANÇAISE DE GÉOGRAPHIE a décidé de réunir en 1875 à Paris un Congrès International des sciences géographiques.

La météorologie occupe parmi ces dernières une place trop importante pour que nous ne comptions pas sur le concours des savants qui cultivent plus particulièrement, comme vous, ce champ, si peu exploré jusqu'à nos jours, des connaissances humaines.

Je viens donc solliciter pour notre œuvre l'aide de vos lumières et votre bienveillante adhésion.

Veuillez agreer, &c.
Le Vice-Amiral President de la Société de Géographie,
DE LA RONCIÈRE LE NOURY.

The consideration of this question was postponed.

Read—The following Report:—

I HAVE to report that I have completed my inspection of the Scotch and Irish telegraphic stations, as well as of those in the north of England.

Nottingham, visited August 3rd. I found Mr. Lowe at home; the exposure of his thermometers and rain gauge is not quite satisfactory, but it is as good as is obtainable at Highfield House.

York, visited August 4th. Mr. Wakefield was absent; the instruments were in good order, but the observer, T. Dunn, is not quite as good as might be wished.

Scarborough, visited August 4th.
North Shields, „ 5th.
Leith, „ 6th.
Aberdeen, „ 7th.
Wick, „ 8th.
All these stations were in good order.

Thurso, visited August 8th. One of the barometers did not act properly, so I brought it away and it has since been replaced by another.

Stornoway, visited August 12th.
Nairn, „ 14th.
Ardrossan, „ 18th.
Donaghadee, „ 19th.
These stations were in good order.

Moville, visited August 21st. The observer at this station is hardly as attentive to his duties as might be wished.

Bidston Observatory, visited September 19th.
Holyhead, „ „ 21st.
These stations were in good order.

Valencia, visited October 12th. At this station I am making a change in the exposure of the thermometers and rain gauge, as an enclosure is now available for a Stevenson's screen.

Roche's Point, visited October 14th.
Kingstown, „ „ 26th.
These stations were both in good order.

The stations of *Sumburgh Head* and *St. Ann's Head* were not visited by me this year. This is due in the former case to the fact that the reports have hardly ever been received during the past year by telegraph, so that I considered that my visit was not absolutely necessary. In the latter case the station has been so satisfactory that I considered that my visit might be dispensed with.

I have also visited the observatories of *Aberdeen*, *Glasgow*, *Stonyhurst*, *Armagh*, and *Valencia*, and have found nothing calling for special remark.

Pursuant to my instructions Mr. Beckley visited all the observatories in the course of the summer, and examined all the instruments; cleaning them where necessary. He has furnished me with a report on the subject.

ROBERT H. SCOTT.

Reported—That a letter dated 12th September had been received from the Colonial Office, enclosing copies of despatches received from the Governor of Western Australia (Minutes 1873, p. 64), stating that proper instruments had now been obtained by the Colony for the purpose of taking Meteorological Observations at the lighthouses there, and asking whether the Meteorological Committee would supply the necessary Registers. A reply has been sent to the Colonial Office, thanking them for their action in the matter, and stating that the Registers would be supplied as requested.—Approved.

Mr. Scott reported that a letter (M. O. 1698) had been received from M. Le Verrier, asking for extracts from ships' registers in possession of the Office to be used in the construction of the "Atlas des Mouvements Généraux de l'Atmosphère" for 1866–7 (in addition to those already received by him in 1869), M. Le Verrier undertaking to pay the expense of copying. (Minutes, p. 54).

Accordingly extracts from all the logs for 1867 had been supplied. No further information for 1866 having come in since 1869.—Approved.

SUBMITTED—The following STATEMENT respecting the RECORDS for March and April 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

—	Aberdeen.		Armagh.		Aberdeen.		Glasgow.		Stonyhurst.		Stonyhurst.		Valencia.	
	April.				March.		April.		March.		April.			
THERMOGRAPH :—														
Action	Good.		Good		Good.		Good.		Good.		Good.		Good	
Photography	Do.		Do.		Do.		Do.		Do.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0	0	0	0	0	0	0	0
,, ,, failure of light	0	0	0	0	0	0	0	0	0	0	0	0	0	0
,, ,, imperfectly moistened bulbs	—	4	—	0	—	9 hrs.	—	3 hrs.	—	0	—	0	—	4
,, ,, partially frozen bulbs	—	0	—	0	—	0	—	0	—	4 hrs.	—	0	—	0
,, ,, other causes	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of errors discovered in entry of standard	1	1	2	5	0	0	0	0	0	0	0	0	0	0
,, ,, ,, by subsidiary measurements	0	0	0	0	5	2	5	2	0	0	0	0	3	3
,, ,, of subtraction in do. tables	2	1	0	1	5	2	1	0	0	0	0	0	0	5
,, ,, detected under glass scale	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—														
Greatest difference	0·10	0·10	0·10	0·10	0·20	0·10	0·20	0·20	0·20	0·10	0·20	0·20	0·20	0·20
Mean difference irrespective of sign	0·06	0·05	0·04	0·05	0·06	0·05	0·06	0·06	0·04	0·07	0·08	0·07	0·06	0·05
Residual difference (—Kew)	+0·05	+0·03	+0·01	+0·05	+0·01	+0·02	—0·02	—0·01	+0·03	0·00	—0·04	—0·03	+0·01	+0·01
Mean monthly difference between simultaneous thermograph and thermometer readings	0·17	0·22	0·12	0·11	0·17	0·19	0·09	0·06	0·17	0·17	0·18	0·18	0·16	0·15
No. of errors in maxima and minima	1	3	0	0	1	3	1	2	0	1	0	0	0	3
Curves re-tabulated at Kew	0	0	0	0	0	0	0	0	2 days	2 days	4 days	4 days	4 days	4 days

SUBMITTED—The following STATEMENT respecting the RECORDS for May 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

——	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH :—	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
Action									Good.	Good.				
Records deficient, due to stoppage of clock									0	0				
„ „ „ other causes									0	0				
Orientation verified									29th.	—				
No. of errors discovered by subsidiaries									0	0				
„ „ „ irregular differences									0	0				
Result of 40 *Remeasurements* :—														
Greatest difference									1·0	1·0				
Mean difference irrespective of sign									0·1	0·3				
Residual difference (— Kew)									0·0	0·0				
RAIN GAUGE :—														
Action									Good.					
Records deficient, due to stoppage of clock									0					
„ „ other causes									0					
Errors in tabulation									0					

BAROGRAPH :—														
Action			Good.										Good.	
Photography			Do.										Do.	
Records deficient, due to stoppage of clock			0										0	
" " failure of light			0										0	
" " other causes			0										0	
No. of errors discovered—														
In entry of standard			0										7	
" calculating residual correction			1										3	
" applying residual correction			0										14	
" subtraction in subsidiary tables			0										0	
" tabulation by subsidiaries			0										0	
" " irregular differences			0										0	
Result of 40 Remeasurements :—														
Greatest difference			·0050										·0050	
Mean difference irrespective of sign			·0013										·0019	
Residual difference (— Kew)			+·0005										—·0004	
Mean monthly difference between simultaneous barograph and barometer readings			·0023										·0023	
THERMOGRAPH :—														
Action	Good.		Good.		Good.		Good.		Good.		Good.		Good.	
Photography	Do.		Do.		Do.		Do.		Fair.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0	0	3 hrs.	3 hrs.	0	0	0	0
" " failure of light	0	0	0	0	1	1	0	0	0	0	0	0	1	0
" " imperfectly moistened bulbs	—	0	—	0	—	0	—	7	—	0	—	0	—	0
" " partially frozen	—	0	—	0	—	0	—	0	—	0	—	0	—	0
" " other causes	0	0	0	0	0	0	0	0	5	0	0	0	0	0
No. of errors discovered in entry of standard	0	0	0	0	0	0	1	0	0	0	0	0	1	0
" " by subsidiary measurements	2	1	0	1	0	0	2	3	0	1	0	0	0	3
" " by subtraction in do. tables	3	1	0	1	0	0	0	2	0	1	0	0	0	0
" " detected under glass scale	5	1	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 Remeasurements :—														
Greatest difference	0·10	0·10	0·10	0·10	0·10	0·10	0·20	0·20	0·10	0·10	0·20	0·20	0·10	0·10
Mean difference irrespective of sign	0·05	0·04	0·04	0·03	0·05	0·04	0·07	0·07	0·03	0·03	0·05	0·05	0·05	0·05
Residual difference (— Kew)	0·00	+0·01	+0·02	—0·01	—0·01	+0·02	—0·05	0·00	—0·02	—0·01	—0·02	+0·01	+0·02	—0·02
Mean monthly difference between simultaneous thermograph and thermometer readings	0·18	0·22	0·12	0·14	0·07	0·07	0·10	0·07	0·12	0·15	0·16	0·16	0·14	0·17
No. of errors in maxima and minima	0	3	0	0	1	1	2	3	0	1	1	0	0	3
Curves retabulated at Kew	0	0	0	2 days	0	0	0	0	0	0	0	0	10 days	10 days

SUBMITTED—The following STATEMENT respecting the RECORDS for June 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

——	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia	
ANEMOGRAPH :—														
Action - - - - -	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Fair.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " other causes - -	0	0	0	0	0	0	0	0	0	0	0	24 hrs.	0	1 hr.
Orientation verified - - - -	—	—	6th.	—	8th.	—	1st.	—	29th.	—	—	—	1st.	—
No. of errors discovered by subsidiaries -	0	0	0	0	1	1	0	0	0	0	0	0	1	1
" " irregular differences	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—														
Greatest difference - - - -	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign - -	0·1	0·2	0·3	0·3	0·1	0·3	0·2	0·3	0·1	0·2	0·2	0·4	0·3	0·4
Residual difference (— Kew) - - -	−0·1	+0·1	−0·1	0·0	−0·1	+0·1	0·0	0·0	0·0	+0·1	0·0	+0·1	0·0	0·0
RAIN GAUGE :—														
Action - - - - -	Fair.		Fair.		Fair.		Fair.		Fair.		Good.		Fair, the traces however are scarcely visible.	
Records deficient, due to stoppage of clock -	0		0		0		0		0		0		0	
" " other causes - -	0		0		24 hourly values.		0		0		0		0	
Errors in tabulation - - - -	0		0		0		0		0		0		0	

BAROGRAPH :—							
Action	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography	Do.	Do.	Do.	Do.	Fair	Do.	Do.
Records deficient, due to stoppage of clock	0	0	1 hr.	0	0	0	0
„ „ failure of light	3 hrs.	3 hrs.	20 hrs.	0	0	0	0
„ „ other causes	0	0	0	0	0	0	0
No. of errors discovered—							
In entry of standard	0	0	0	1	0	0	1
„ calculating residual correction	0	2	2	1	0	0	1
„ applying residual correction	0	0	0	0	0	0	3
„ subtraction in subsidiary tables	0	0	0	0	0	0	0
„ tabulation by subsidiaries	0	0	0	0	0	0	0
„ „ irregular differences	0	0	0	0	0	0	0
Result of 40 *Remeasurements :—*							
Greatest difference	·0050	·0050	·0050	·0050	·0050	·0050	·0050
Mean difference irrespective of sign	·0019	·0020	·0020	·0024	·0021	·0017	·0025
Residual difference (— Kew)	—·0013	·0000	—·0001	—·0013	—·0005	+·0009	+·0005
Mean monthly difference between simultaneous barograph and barometer readings	·0015	·0026	·0016	·0017	·0019	·0014	·0024

THERMOGRAPH :—														
Action	Good.*		Good.		Good.		Good.		Good.		Good.		Good.	
Photography	Do.		Fair.		Do.		Fair.		Fair.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock	0	0	0	0	8 hrs.	8 hrs.	0	0	0	0	0	0	0	0
„ „ failure of light	3 hrs.	3 hrs.	3 hrs.	3 hrs.	2 hrs.	2 hrs.	0	0	0	0	0	0	0	0
„ „ imperfectly moistened bulbs	—	2	—	2	—	0	—	6	—	5	—	0	—	2 hrs.
„ „ partially frozen	—	0	—	0	—	0	—	0	—	0	—	0	—	0
„ „ other causes	0	0	0	0	0	0	0	0	7	2	0	0	0	0
No. of errors discovered in entry of standard	0	0	0	0	0	0	0	0	0	0	0	0	1	3
„ „ by subsidiary measurements	0	1	0	0	0	1	1	1	0	0	0	0	0	0
„ „ by subtraction in do. tables	0	0	2	0	0	0	0	1	1	2	1	0	0	0
„ „ detected under glass scale	0	0	2	5	0	0	1	0	1	2	0	0	0	0
Result of 40 *Remeasurements :*														
Greatest difference	0·10	0·20	0·20	0·20	0·20	0·20	0·10	0·10	0·10	0·20	0·20	0·20	0·20	0·20
Mean difference irrespective of sign	0·05	0·06	0·06	0·06	0·06	0·05	0·06	0·05	0·04	0·07	0·06	0·05	0·06	0·06
Residual difference (— Kew)	0·00	0·00	+0·03	+0·01	0·00	—0·01	—0·03	+0·01	0·00	—0·02	—0·02	+0·01	0·00	+0·04
Mean monthly difference between simultaneous thermograph and thermometer readings	0·21	0·18	0·12	0·14	0·08	0 07	0·08	0·06	0·15	0·15	0·16	0·18	0·16	0·18
No. of errors in maxima and minima	0	0	0	3	0	1	3	2	1	0	0	0	2	5
Curves re-tabulated at Kew	0	0	0	0	0	0	10 hrs.	10 hrs.	0	0	0	0	4 dys.	6 dys.

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* Sixteen days dry and wet re-columned, corrections being applied.

SUBMITTED—The following STATEMENT respecting the RECORDS for JULY 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

—	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH :—	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
Action - - - - -	Good.	Good.	Good.	Fair.	Good.	Good.	Good.	Fair.	Good.	Good.	Good.	Good.	Good.	Good.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
„ „ other causes - -	0	0	0	0	0	0	0	0	5	5*	0	0	0	0
Orientation verified - - - -	31st	—	11th	—	14th	—	1st	—	31st	—	—	—	—	—
No. of errors discovered by subsidiaries -	0	0	0	3	0	0	0	0	0	0	0	0	0	0
„ „ irregular differences	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Result of 40 *Remeasurements :—*														
Greatest difference - - - -	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	0·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign - -	0·1	0·3	0·2	0·4	0·1	0·4	0·1	0·3	0·0	0·2	0·3	0·2	0·3	0·4
Residual difference (—Kew) - - -	0·0	—0.1	0·0	+0·1	—0·1	+0·1	0·0	0·0	0·0	+0·1	—0·1	0·0	—0·1	0·0
RAIN GAUGE :—														
Action - - - - -	Fair.		Fair.		Fair.		Fair.		Good.		Good.		Curves very faint, on some days no trace is visible.	
Records deficient, due to stoppage of clock -	0		0		0		0		0		0		0	
„ „ other causes - -	0		0		0		0		0		0		0	
Errors in tabulation - - - -	0		0		0		6		0		0		1	

BAROGRAPH :—							
Action	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography	Fair.	Fair.	Do.	Fair.	Do.	Do.	Do.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0
„ „ failure of light	0	0	14 hrs.	0	0	0	0
„ „ other causes	0	0	1	0	0	0	0
No. of errors discovered—							
In entry of standard	0	1	0	1	0	1	0
„ calculating residual correction	0	5	1	1	0	1	1
„ applying residual correction	0	0	0	2	0	0	5
„ subtraction in subsidiary tables	0	0	0	0	0	0	0
„ tabulation by subsidiaries	0	0	0	0	0	0	0
„ „ irregular differences	0	0	0	0	0	0	0
Result of 40 *Remeasuremeuts* :—							
Greatest difference	·0030	·0040	·0040	·0050	·0030	·0050	·0050
Mean difference irrespective of sign	·0017	·0017	·0013	·0019	·0012	·0023	·0019
Residual difference (—Kew)	—·0003	+·0006	—·0001	—·0009	—·0001	—·0018	+·0002
Mean monthly difference between simultaneous Barograph and Barometer readings	·0016	·0027	·0017	·0018	·0022	·0019	·0021

THERMOGRAPH :—														
Action	Good.†		Good.		Good.		Good.		Good.		Good.		Good.	
Photography	Do.		Indifferent.		Do.		Do.		Do.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0	0	1	1	0	0	0	0
„ „ failure of light	0	0	0	0	0	0	0	0	0	0	0	0	0	0
„ „ imperfectly moistened bulbs	—	7 hrs.	—	0	—	0	—	0	—	0	—	0	—	0
„ „ partially frozen	—	0	—	0	—	0	—	0	—	0	—	0	—	0
„ „ other causes	0	0	48 hrs.	48 hrs.	2 hrs.	2 hrs.	0	0	0	0	0	0	0	0
No. of errors discovered in entry of Standard	1	1	4	2	0	0	0	0	0	0	0	0	0	0
„ „ by subsidiary measurements	0	0	0	3	0	0	1	5	0	0	1	0	0	0
„ „ of subtraction in do tables	0	0	0	0	0	0	0	3	3	0	1	0	0	0
„ „ detected under glass scale	0	0	0	0	0	0	0	1	1	0	1	0	11	0
Result of 40 *Remeasurements* :—														
Greatest difference	0·20	0·10	0·10	0·20	0·20	0·20	0·20	0·20	0·10	0·20	0·10	0·10	0·20	0·20
Mean difference irrespective of sign	0·05	0·06	0·05	0·03	0·04	0·04	0·08	0·04	0·06	0·05	0·05	0·06	0·04	0·04
Residual difference (—Kew)	0·00	—0·01	0·00	0·00	—0·02	0·00	+0·02	—0·01	+0·01	+0·02	0·00	—0·01	0·00	0·00
Mean monthly difference between simultaneous Thermograph and Thermometer readings	0·18	0·20	0·16	0·17	0·06	0·07	0·13	0·08	0·13	0·18	0·18	0·16	0·18	0·18
No of errors in maxima and minima	0	1	0	1	0	0	3	4	0	1	0	1	1	3
Curves re-tabulated at Kew	0	0	5 days	6 days	0	0	2 days	1½ days	0	0	0	0	4 days	4 days

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* Mr. Beckley cleaning instrument.

† Eight days dry bulb re-columned, corrections being applied.

SUBMITTED—The following STATEMENT respecting the RECORDS for August 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

——	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH:—	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
Action	Good.	Good.	Good.	Good	Good.	Good.	Good.	Good.	Good.	Good.	Good	Good	Good, excepting from 11th to 13th.	Good, excepting on part of the 11th.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " other causes	0	7 hrs.	0	0	0	0	0	0	0	0	0	0	52 hrs.	13 hrs.
Orientation verified	—	—	—	—	14th	—	—	—	—	—	—	—	1st	—
No. of errors discovered by subsidiaries	0	0	0	0	0	0	2	0	0	0	0	0	0	0
" " irregular differences	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements*:—														
Greatest difference	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign	0·2	0·3	0·2	0·3	0·2	0·3	0·2	0·4	0·0	0·2	0·2	0·2	0·3	0·3
Residual difference (−Kew)	0·0	+0·1	0·0	−0·1	0·0	+0·1	0·0	+0·2	0·0	+0·1	0·0	−0·1	−0·2	+0·2
RAIN GAUGE.														
Action	Fair.		Fair.		Fair.		Fair.		Fair.		Good, excepting on the 11th.		Fair.	
Records deficient, due to stoppage of clock	0		0		0		0		0		0		0	
" " other causes	0		0		0		0		0		0		0	
Errors in tabulation	0		0		2		1		0		3		10	

BAROGRAPH :—							
Action	Good.	Good.	Good.	Good.	Good.	Good.	Fair.
Photography	Do.	Do.	Do.	Fair.	Do.	Do.	Do.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	9hrs.
„ „ failure of light	0	0	3 hrs.	0	0	0	0
„ „ other causes	1 hr.*	1 hr.*	0	24 hrs.	0	13hrs.*	0
No. of errors discovered—							
In entry of standard	0	2	0	1	0	0	1
„ calculating residual correction	0	3	1	3	0	0	0
„ applying residual correction	1	2	6	1	0	1	3
„ subtraction in subsidiary tables	0	0	0	0	0	0	0
„ tabulation by subsidiaries	0	0	0	0	0	0	0
„ „ irregular differences	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—							
Greatest difference	·0040	·0050	·0050	·0050	·0030	·0050	·0050
Mean difference irrespective of sign	·0010	·0016	·0017	·0022	·0009	·0021	·0017
Residual difference (— Kew)	—·0003	+·0007	·0000	—·0003	—·0001	—·0004	+·0004
Mean monthly difference between simultaneous barograph and barometer readings	·0013	·0024	·0019	·0020	·0015	·0020	·0020

THERMOGRAPH :—														
Action	Good.		†Good.		Good.		Good.		Good.		Good.		‡Fair.	
Photography	Do.		Do.		Do.		Do.		Do.		Do.		Good.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock	3 hrs.	*3 hrs.	0	0	0	0	0	0	11 hrs.	11 hrs.	6 hrs.	6 hrs.	0	0
„ „ failure of light	0	0	0	0	4 hrs.	3 hrs.	0	0	0	0	0	0	0	0
„ „ imperfectly moistened bulbs	0	—	0	—	0	—	0	—	0	—	—	0	0	—
„ „ partially frozen	0	—	0	—	0	—	0	—	0	—	—	0	0	—
„ „ other causes	0	0	0	0	0	0	0	0	0	0	0	0	3 hrs.	3 hrs.
No. of errors discovered in entry of standard	0	0	0	0	0	0	0	0	0	0	0	1	0	0
„ „ by subsidiary measurements	0	0	2	0	1	0	0	1	0	0	0	0	0	0
„ „ by subtraction in do. tables	0	1	1	0	0	1	1	3	0	0	0	1	2	0
„ „ detected under glass scale	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Result of 40 *Remeasurements* :—														
Greatest difference	0·10	0·20	0·30	0·20	0·10	0·10	0·20	0·20	0·10	0·10	0·20	0·20	0·10	0·10
Mean difference irrespective of sign	0·04	0·05	0·12	0·07	0·04	0·06	0·09	0·09	0·03	0·04	0·05	0·06	0·06	0·07
Residual difference (— Kew)	0·00	—0·03	—0·11	—0·02	0·00	+0·06	—0·05	+0·04	+0·01	0·00	+0·01	+0·01	+0·01	+0·01
Mean monthly difference between simultaneous thermograph and thermometer readings	0·27	0·22	0·15	0·16	0·07	0·08	0·13	0·11	0·11	0·13	0·20	0·22	0·21	0·21
No. of errors in maxima and minima	0	0	2	2	0	0	2	0	0	0	0	1	0	5
„ in entry of tabulated readings	0	1	0	0	0	0	1	1	0	0	§?	?	0	0

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* Mr. Beckley inspecting and cleaning instruments.

† 5 days dry bulb and 4 days wet bulb, have been re-tabulated at Kew.

‡ 4 days each, dry and wet, have been re-tabulated at Kew.

§ For 8½ days each dry and wet new values have been obtained at Kew for the Thermograph readings, owing to a difference in the setting of the scale.

SUBMITTED.—The following STATEMENT respecting the RECORDS for September 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

Points noticed at Kew.	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH :—	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.	Direction.	Velocity.
Action	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Records deficient, due to stoppage of clock	0	0	0	0	0	0	4 hrs.	4 hrs.	0	0	0	0	0	0
" " other causes	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orientation verified	30th	—	21st	—	14th	—	1st	—	30th	—	3rd	—	1st	—
No. of errors discovered by subsidiaries	0	0	1	0	0	0	0	2	0	0	0	1	0	0
" " irregular differences	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements* :—														
Greatest difference	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	0·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign	0·3	0·3	0·3	0·3	0·2	0.3	0·3	0·2	0·0	0·1	0·3	0·2	0·3	0·3
Residual difference (— Kew)	−0·1	+0·1	0·0	0·0	0·0	0·0	+0·1	0·0	0·0	0·0	0·0	+0·1	−0·1	0·0
RAIN GAUGE :														
Action	Fair.		Fair.		Fair.		Fair.		Fair.		Fair.		Fair.	
Records deficient, due to stoppage of clock	0		Clock dismounted for two days.		7 hrs.		0		0		0		0	
" " other causes	0		0		0		0		0		0		0	
Errors in tabulation	0		0		5		2		0		0		3	

BAROGRAPH :—							
Action - - - - -	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography - - - - -	Do.	Fair.	Do.	Indifferent.	Do.	Fair.	Do.
Records deficient, due to stoppage of clock -	0	1 hr.	0	0	0	0	1 hr.
" " failure of light -	0	0	0	0	0	0	0
" " other causes - -	0	0	0	0	0	1 hr.	0
No. of errors discovered—							
In entry of standard - - -	0	2	2	8	0	0	7
" calculating residual correction -	0	1	0	4	0	0	1
" applying residual correction - -	0	1	0	0	0	1	1
" subtraction in subsidiary tables -	0	0	0	0	0	0	0
" tabulation by subsidiaries - -	0	0	0	1	0	0	0
" " irregular differences -	0	0	0	0	0	0	1
Result of 40 Remeasurements :—							
Greatest difference - - - -	0·0040	0·0050	0·0040	0·0040	·0020	0·0050	0·0050
Mean difference irrespective of sign - -	0·0014	0·0017	0·0015	0·0019	0·0008	0·0019	0 0018
Residual difference (— Kew) - - -	−0·0003	+0·0002	+0·0002	−0·0001	0·0000	0·0000	+0·0015
Mean monthly difference between simultaneous barograph and barometer readings - -	0·0013	0·0022	0·0018	0·0017	0·0018	0·0017	0·0025

THERMOGRAPH :—														
Action - - - - -	Good.		Good.		Good.		Good.		Good.		Good.*		Good.†	
Photography - - - - -	Do.		Do.		Do.		Do.		Do.		Fair.		Do.	
	Dry.	Wet.	Dry	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	0	0	8 hrs	8 hrs.	0	0	0	0
" " failure of light -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " imperfectly moistened bulbs - -	—	0	—	2 hrs.	—	0	—	1 hr.	—	0	—	0	—	0
" " partially frozen bulbs -	—	0	—	0	—	0	—	0	—	0	—	0	—	0
" " other causes - -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of errors discovered in entry of standard -	0	0	0	0	0	0	0	0	0	0	0	0	1	0
" " by subsidiary measurements -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
" " of subtraction in do. tables -	0	0	0	0	0	0	0	0	0	0	2	0	0	0
" " detected under glass scale -	0	0	1	0	0	0	0	1	0	0	0	1	1	2
Result of 40 Remeasurements :—														
Greatest difference - - - -	0·10	0·10	0·10	0·10	0·10	0·10	0·20	0·10	0·20	0·10	0·20	0·20	0·20	0·20
Mean difference irrespective of sign - -	0·04	0·04	0·03	0·06	0·03	0·03	0·04	0·05	0·04	0·04	0·06	0·06	0·06	0·06
Residual difference (—Kew) - - -	−0·01	−0·01	−0·01	0·00	−0·01	0·00	−0·03	−0·01	+0·02	−0·02	0·00	0·00	+0·02	+0·02
Mean monthly difference between simultaneous thermograph and thermometer readings -	0·12	0·20	0·16	0·18	0·06	0·09	0·10	0·13	0·09	0·17	0·13	0·14	0·18	0·17
No. of errors in maxima and minima - -	0	0	0	1	0	0	2	2	0	0	0	0	0	0

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* For several days during this month new values have been obtained at Kew for the Thermograph readings, owing to a difference in the setting of the scale.

† Three days each dry and wet re-tabulated at Kew.

Read—A letter from Capt. Toynbee, submitting excellent logs kept by—

Capt. W. Ellery, ship "Bowfell," (Minutes 1873, p. 61).
„ D. Gray, s.s. "Eclipse," (Minutes 1870, p. 76). five last

Mr. Scott was instructed to present the Wind and Current Charts to the ~~five first~~-named gentlemen, and to express the marked thanks of the Committee to the others.

Capt. J. Gray, s.s. "Hope," (Minutes 1870, p. 76).
„ W. Greenwood, ship "Gareloch," (Minutes 1873, p. 48).
„ E. Carl V. Heggum, ship "Rozelle," (Minutes 1873, p. 61).
„ A. Kerr, ship "Ardgowan," (Minutes 1873, p. 61).
„ — Nares, R.N., H.M.S. "Challenger."
„ J. A. Martyn, R.M.S. "Java," (Minutes 1874, p. 6).
„ T. C. Potts, ship "Tenasserim," (Minutes 1873, p. 76).
„ J. J. Price, barque "Sorata," (Minutes 1874, p. 50).
„ C. H. Renaut, ship "Glenlora," (Minutes 1873, p. 61).
„ W. H. Smith, s.s. "Scandinavian," (Minutes 1873, p. 43).
„ W. Watson, R.M.S. "Parthia," (Minutes 1874, p. 6).
„ W. G. Comley, R.N.R., s.s. "Hongkong."
„ H. Longley, s.s. "Yorkshire."
„ C. Maples, ship "Genii."
„ J. E. Mouland, s.s. "Batavia," (Minutes 1872, p. 76).
„ W. C. Smith, barque "Kingdom of Saxony."

Submitted—The following statement of accounts paid, and liabilities, to 30 Sept. 1874:—

——	Paid.	Estimated Liabilities.
	£ s. d.	£ s. d.
OFFICE:—		
Salaries	656 2 3	—
Rent, fuel, &c.	300 15 0	—
Contingencies	93 3 6	5 0 0
LAND METEOROLOGY:—		
Expenses at observatories	1,303 7 9	108 0 0
New instruments for ditto	285 4 0	—
Computations	366 10 8	—
Telegraphy	1,233 16 10	264 0 0
Inspections, &c.	334 16 8	36 0 0
Computations	327 14 5	—
OCEAN METEOROLOGY:—		
Marine Superintendent	200 0 0	—
Instruments, Admiralty	111 12 11	138 0 0
Ditto Mercantile Marine	216 18 6	205 0 0
Computations and care of instruments	620 17 2	—
Totals	6,050 19 8	756 0 0

Grand total - - £6,806 19*s.* 8*d.*

Reported—That copies of the Daily Weather Charts had been supplied to the following:—

A. E. Murray, F.M.S., Hastings	in exchange.
Capt. Bedford Pim, R.N., London	„
Her Majesty's Storekeeper, Deptford	for exhibition.
Commander, R.N. Hamond, H.M.S. "Squirrel"	„
Budehaven, L. B. Station	„
Plymouth, G. W. Docks Company	„

Submitted—The following publications:

Remarks to accompany the Monthly Charts for Square III. (p. 50).
Quarterly Weather Report, 1871, Part IV.; 1873, Part III.

Reported—That the following sums had been transferred from the deposit account to the current account at the Bank of England:—

		£ s. d.
31st Aug.	On the signature of Admiral Richards	2,000 0 0
28th Sept.	„ General Strachey	500 0 0
26th Oct.	„ the Hydrographer	500 0 0

Also that the following cheques had been drawn:—

12th Aug.	On the signature of the Hydrographer, J. S. Harding, junior, for Office expenses	30 0 0

On the 31st August, on the signature of Admiral Richards :—

					£	s.	d.
For Office :							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					*20	3	4
J. S. Harding, sen.					†9	12	6
T. D. Bell					†7	0	0
E. Higgs, Repairs, &c.					12	9	6
E. Stanford, Advertisements					3	1	3
Williams and Norgate, Books					3	1	3
For Observatories :							
T. Kerr, Valencia					20	16	8
Malby and Sons, Printing					6	5	0
R. W. Monro, Anemograph, &c.					81	18	6
R. H. Curtis	Computations, &c.				12	10	0
A. J. Rigby					†9	12	0
C. Stodart					†10	10	0
C. H. Thompson					†5	15	0
J. A. Curtis					8	6	8
R. Sargeant					†5	0	0
For Telegraphy :							
Postmaster-General, January–March					375	9	9
S. M. Clare, January–June					15	12	8
N. J. Holmes, Scilly Co.					6	15	0
V. Brooks, Day & Son, Printing					2	8	0
J. J. Hicks, Thermometer screens					3	14	2
Wightman & Co., Wrappers					5	10	0
F. Gaster	Computations, &c.				*18	13	2
W. L. Dallas					*8	3	4
F. Brodie					9	2	6
For Ocean Meteorology :							
H. Toynbee, Marine Superintendent					33	6	8
Cashiers of Bank of England, Bermuda Anemograph		0	14	4			
		1	19	3			
					2	13	7
J. J. Hicks, "A" thermometers					1	15	0
F. Pastorelli	"	12	19	5			
"	M. O. instruments	1	1	0			
					14	0	5
J. Browning	"				1	15	0
L. P. Casella	"	1	3	6			
"	"	1	16	6			
					3	0	0
Dickeson & Stewart, Freight					2	15	7
J. D. Potter, Charts					11	5	0
P. Feathers, Dundee agent					2	19	2
J. R. Jones, Aberdeen "					1	5	9
H. J. Smart, Liverpool "					9	18	8
R. Strachan	Computations, &c.				‡20	0	0
C. Harding					*14	14	8
W. G. James					8	6	8
T. E. Allen					8	6	8
J. W. McVeagh					†5	15	0
On Account :—							
J. S. Harding, jr., Office expenses					100	0	0
R. H. Scott, Inspection, &c.					60	0	0
Total					£1,030	1	11

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* Including allowance for extra attendance.
† Five weeks to the 29th.
‡ Including allowance for care of instruments.

On the 28th of September on the signature of General Strachey:—

					£	s.	d.
For Office:							
R. H. Scott	Salaries and wages				66	13	4
J. S. Harding, jun.					19	3	4
J. S. Harding, sen.					*7	14	0
T. D. Bell					*5	12	0
Cole and Leigh, Coals					6	15	0
R. W. Jacques, Rent for Quarter					133	13	0
J. Merren, Repairs					6	4	0
For Observatories; Quarterly Allowances, &c.:							
D. Thomson, Aberdeen					†61	17	6
T. R. Robinson, Armagh		40	14	0			
„	Expenses for Quarter	15	5	9			
					55	19	9
W. P. Dymond, Falmouth					66	5	0
R. Grant, Glasgow					†61	17	6
H. Williams, Holyhead					2	13	6
S. Jeffery, Kew		62	10	0			
„	Examination of Records	100	0	0			
					162	10	0
C. Clouston, Orkney					3	6	4
E. J. Purbrick, Stonyhurst		†49	7	6			
„	Postage, June quarter	0	6	11			
					49	14	5
T. Kerr, Valencia		70	18	4			
„	Salary for September	20	16	8			
					91	15	0
G. T. Watson, Yarmouth					4	0	6
P. Adie, tabulating scales					12	16	0
Bates, Elliot & Co., photographic trays					4	2	3
R. H. Curtis	Computations, &c.				12	10	0
A. J. Rigby					*7	14	0
C. H. Thompson					*4	12	0
C. Stodart					*8	8	0
J. A. Curtis					8	6	8
For Telegraphy; Quarterly Allowances, &c.:							
Postmaster General, 1st April–30th June					301	19	7
H. Todd, Cambridge					4	0	6
J. Costello, Dover					3	5	9
J. Tilston, Holyhead					3	6	6
G. Mitchell, Kingstown					3	6	0
F. Gaster, London					3	5	0
W. D. Penny, Nairn					4	4	6
E. J. Lowe, Notts					3	18	0
J. Lucas, Oxford					3	6	0
J. Merrifield, Plymouth					3	5	0
W. Sandford, Portishead					3	19	3
W. Thomas, Scilly					4	7	10
W. Lawrence, Shetland					3	5	0
J. Smith, Stornoway					3	5	0
J. Trotter, Thurso					3	5	0
J. Sinclair, Wick					3	5	0
G. T. Watson, Yarmouth					3	6	6
C. Wakefield, York					3	6	0
F. Dangerfield, delivery of D.W. Charts					12	16	9
Carried forward					£1,238	16	3

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* 4 weeks to the 26th.

† 12*s.* 6*d.* deducted for Forms supplied.

				£	s.	d.
Brought forward				1,238	16	3
For Telegraphy, &c.—*continued.*						
F. Gaster — Computations, &c.				‡17	16	8
W. L. Dallas — Computations, &c.				‡10	6	4
F. Brodie — Computations, &c.				‡6	12	6
For Ocean Meteorology:						
H. Toynbee, Marine Superintendent				33	6	8
P. Adie, repairing "A" barometers	6	15	0			
„ „ "M. O." „	3	16	0			
„ "M.O." barometers	59	10	0			
„ „ „	4	0	0			
				74	1	0
L. P. Casella, anemometer				3	15	8
Elliott Bros., repairing "A" aneroids	6	4	0			
„ "M.O." instruments	3	12	0			
				9	16	0
Negretti & Zambra, "A" instruments	10	12	9			
„ "M.O." „	33	18	9			
				44	11	6
Allan Bros., freight				2	15	9
J. R. Jones, Aberdeen agent				5	8	10
H. J. Smart, Liverpool agent				9	11	0
E. Higgs, packing cases				3	5	0
J. H. Woodstock, packing cases				2	16	6
R. Strachan — Computations, &c.				20	0	0
C. Harding — Computations, &c.				§15	8	8
W. G. James — Computations, &c.				8	6	8
T. E. Allen — Computations, &c.				8	6	8
J. W. McVeagh — Computations, &c.				*4	12	0
For Office Expenses:						
J. S. Harding, junior				110	0	0
Total				£1,629	13	8

On the 26th of October on the signature of the Hydrographer:—

				£	s.	d.
For Office:						
R. H. Scott — Salaries and wages				66	13	4
J. S. Harding, jun. — Salaries and wages				19	3	4
J. S. Harding, sen. — Salaries and wages				†7	14	0
T. D. Bell — Salaries and wages				†5	12	0
For Observatories:						
R. and J. Beck, repair of instruments				7	5	0
S. Jeffery, Kew, Pagoda observations	21	0	0			
„ „ Postages	10	4	6			
„ „ Electrometer fittings	4	5	9			
				35	10	3
T. Kerr (Valencia), Salary				20	16	8
R. H. Curtis — Computations, &c.				12	10	0
A. J. Rigby — Computations, &c.				†7	14	0
C. H. Thompson — Computations, &c.				†4	12	0
C. Stodart — Computations, &c.				†8	8	0
J. A. Curtis — Computations, &c.				†8	6	8
Carried forward				£204	5	3

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* Four weeks to the 26th.
† Four weeks to the 24th.
‡ Including allowance for extra attendance.
§ „ „ care of instruments.

		£	s.	d.	£	s.	d.
Brought forward					204	5	3
For Telegraphy:							
N. J. Holmes, Scilly Co., August – September					6	17	6
F. Dangerfield, delivery of D.W. Charts					12	7	9
J. J. Hicks, Stevenson's screen					1	17	2
Negretti and Zambra, electric anemometer					20	0	0
F. Gaster	Computations, &c.				†17	16	8
W. L. Dallas					†9	17	4
F. Brodie					†8	5	0
For Ocean Meteorology:							
H. Toynbee, Marine Superintendent					33	6	8
P. Adie, Papers, Bermuda anemometer					2	5	10
Cashiers, Bank of England		6	10	0			
„ „		0	13	6			
					7	3	6
J. H. Woodstock, packing cases					2	6	6
S. Jeffery "A" verifications		10	0	0			
„ "M.O." „		34	2	0			
„ "M.O." „		1	4	0			
					45	6	0
Allan Brothers, freight, Toronto					2	16	7
H. Bond, hire of furniture					3	16	4
J. J. Hicks, "M.O." thermometers		27	8	0			
„ thermometer screens		8	18	6			
					36	6	6
D. MacGregor & Co., Glasgow agent					2	13	6
R. Strachan	Computations, &c.				‡20	0	0
C. Harding					†15	3	5
W. G. James					8	6	8
T. E. Allen					8	6	8
J. W. McVeagh					*4	12	0
For Office Expenses:							
J. S. Harding, jun., on account					110	0	0
Total					£583	16	10

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† Four weeks to the 24th.
† Including allowance for extra attendance.
‡ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, November* 16, 1874.

PRESENT:

Mr. De La Rue in the Chair.

Captain Evans.	Major-General Strachey.
Major-General Smythe.	Sir. C. Wheatstone.

The Director was in attendance.

The Minutes of last meeting (November 2) were read and confirmed.

Mr. Scott reported that he had received a visit from Mr. P. L. Sclater, F.R.S., with reference to the possibility of the supply of Meteorological Tables from the Office to the Local Government Board for embodiment in the Registrar-General's Reports. Mr. Sclater had applied for and received a complete copy of the correspondence to which reference was made on the Minutes of last meeting (p. 68).

With reference to Mr. Scott's Report on the Proceedings of the Permanent Committee of the Vienna Congress, the following instructions were issued to him:—

To consider and report on the possibility of giving data relating to Vapour, in the Tables of Hourly Readings from the Observatories (Minutes, p. 1).

To continue the issue of these Tables for the year 1875, on the same terms as heretofore.

To put on record the subjoined Form, which is proposed for the publication of Actual Observations and Monthly Means from the stations of the second order (say 16 in number), as mentioned in the foregoing Report.

DATE.	BAROMETER.		AIR TEMPERATURE.				HUMIDITY.				WIND.		CLOUD.		RAIN.	REMARKS.
							ABSOLUTE.		RELATIVE.		DIR^{N} & FORCE.		AMOUNT.		Measured at 9 a.m.	
	9 a.m.	9 p.m.	9 a.m.	9 p.m.	MIN.	MAX.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.		
1																
2																
3																
4																
5																
6																
7																
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29																
30																
31																

1873.	Mean Pressure.	AIR TEMPERATURE.										Tension of Vapour.	Relative Humidity.			Mean Amount of Cloud.
		Hourly Means.		Daily Means.		Means of		Abs. Min.		Abs. Max.			Mean.	Minimum.		
		9 a.m.	9 p.m.	Simple	Reduced.	Min.	Max	Temp.	Day.	Temp.	Day.				Day.	
January -																
February -																
March -																
April -																
May -																
June -																
July -																
August -																
September																
October -																
November																
December																
Mean -																

1873.	RAINFALL.			WEATHER.								WIND.								
				No. of Days of								No. of Obs. under each Point.								
	Total.	Max.	Day.	Rain.	Snow.	Hail.	Thunder Storms.	Fog.	Clear Sky.	Overcast.	Gales.	N.	NE.	E.	SE.	S.	SW.	W.	NW	Calms.
January -																				
February -																				
March -																				
April -																				
May -																				
June -																				
July -																				
August -																				
September																				
October -																				
November																				
December																				
Mean -																				

Mr. Scott was further instructed to communicate with the Meteorological Society (Minutes, pp. 18 & 22), and ascertain whether, and on what terms, the Society would be prepared to furnish Monthly Observations from certain stations to be selected by the Office.

With reference to the invitation to the proposed Geographical Congress at Paris in 1875, Mr. Scott was instructed to decline, with expression of regret at feeling obliged to do so.

Submitted—The following remarks by Dr. Jelinek respecting Anemometer Reductions, in continuation of his former paper (Minutes, 1873, p. 67), and in reply to Dr. Robinson's letter (Minutes, 1873, p. 69):—

On the Discussion of Anemometrical Observations.*

After having reproduced Dr. Robinson's views as nearly as we can, we may be allowed to add a few words to our former remarks (Minutes, 1873, p. 67), as we see that their sense has not been always correctly understood.

If we have anemograms from any station, they may be utilized in one of the three following ways:—

1°. The anemograms themselves may be communicated lithographically, as is done in the Quarterly Weather Reports of the Meteorological Office;

2°. The wind directions and velocities from hour to hour may be published, as in the Annals of the Central Physical Observatory of St. Petersburg, or those of Brussels Observatory, Upsala, &c.; or,

3°. Instead of the direction and velocity, the rectangular components from hour to hour may be published.

It is not easy to determine *a priori* which of the three methods is preferable, as this depends upon the use which it is wished to make of the anemometrical data in special investigations. There is no doubt that the lithographed curves present the most complete materials, but on account of the great cost, and the difficulty of using them in calculations, this kind of publication must generally be abandoned. In most cases also it will suffice to know the conditions of wind from hour to hour, so that no real objection can be raised against the second and third methods of publication.

Another question is, if from want of funds or other causes, none of the above-mentioned forms of publication can be selected, but merely *abstracts, results, i.e.* generally speaking, *mean values*, can be published; to which data shall the preference be given in this case? And here again the reply will differ according to the investigation to be undertaken with the data. It can well be imagined that for one investigation the method of components would be the most suitable, while for another a different way of grouping the materials would prove the best.

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* Journal of the Austrian Meteorological Society, Vol. ix., No. 4.

While the meteorologist who undertakes a special investigation can scarcely be in doubt as to the manner in which he would wish to see the materials, which are furnished by the self-registering apparatus, made ready to his hand, the more frequent case is that where anemometrical observations can only be published *in abstract* for the use of all meteorologists and in different inquiries, and this is far more difficult to deal with.

It must here above all be declared that in the article in Vol. VIII. (above referred to) the use of Bessel's Formula was *not* recommended by me, as seems generally to be assumed, so that Dr. Robinson even calls it Dr. Jelinek's formula.

The idea which I had, and to which, perhaps, I gave a too cursory expression, was nearly as follows:—

If mean values (abstracts) of the anemometrical data are to be published, a considerable portion of the materials at hand must in every case be omitted. The mean values to be published should in my opinion fulfil the following conditions:—

1° They should give as complete as possible a summary of the average wind conditions for the period under consideration.

2° They should be deduced from such a number of individual data that the mean values should possess such an amount of certainty, that in the transition from one mean value to the other the general law of succession which exists is not masked by too great jumps and irregularities.

3° The results to be deduced from the anemometrical observations should correspond in form as nearly as possible to those of other stations.

With regard to the first point, the discussion of anemometrical observations gives *mean components* (not components for a definite epoch), *i.e.*, two constants for a given period of time. In the distribution under points, as calculated at most stations, we get 8 or 16 constants; in the discussion of anemograms at least 16 directions would be distinguished, and for each group the number of hours would be given during which the wind in question has blown and the space it has traversed. The mean velocity corresponding to a given direction is got by division. Instead of two constants, therefore, twice 16, or 32, would have to be published.

I think, therefore, I am right in asserting that 32 constants give a more complete solution of the problem—a more complete summary of the wind conditions than two constants. If it is wished to reduce the 32 constants to a smaller number, Bessel's formula can be applied, firstly, to the number of hours which the different winds have blown; secondly, to the space traversed by the wind, and perhaps also, thirdly, to the mean velocity. If we are content with 3 or 4 terms, we shall have reduced the constants for each to 5 or 7, therefore to 10 or 14 for the two functions, thereby considerably diminishing the above-mentioned 32 constants. The second term of the expression for the space traversed by the wind, gives the two rectangular components, (or what corresponds to them, the resultant direction and velocity,) *and moreover gives still more,* namely, a view of the wind's distribution, which agrees tolerably closely with the observations, and in which the original irregularities and jumps in the observations are partly smoothed down.

But I have nowhere recommended this use of Bessel's formula. The remarks in Vol. VIII. merely had the object of pointing out the connexion between Bessel's formula and the calculation by components. If the choice lay between giving the components only, or the calculation by Bessel's formula, then I must decide for the latter, because 10 or 14 constants must give more information than 2 as to the conditions of wind.

Generally, it appears to me, however, sufficient to keep to the deduction of the wind distribution (number of hours and mean velocity) without using Bessel's formula. The investigations which meteorologists have to carry out cause such an expenditure of time and trouble that it should not be increased without urgent necessity.

The publication of 32 numerical values instead of 2, would certainly greatly swell the size of the publication, if the consideration referred to in the second point does not render the formation of larger groups absolutely necessary. To deduce a mean from six years, with an element so changeable as the wind, cannot give a sufficiently accurate result. In the present state of our knowledge of wind conditions it will suffice provisionally if the yearly march is exhibited by the series of monthly means; it will be time enough later to descend to smaller intervals (10 day means and 5 day means). With regard to the third point (the desirability of agreement with the results usually given by other stations) there can be no doubt that for the present, and for a long time to come, none other than the results of the wind distribution must be expected from stations of the second order (if the original observations are not published).

Mr. Scott reported that he had received a letter from M. Parlatore, Director of the Museum at Florence, relating to the possibility of the transmission of Daily Resumés of the Weather by telegraph from London to Florence.

Mr. Scott stated that this subject had been previously mooted by the late Professor Matteucci, in correspondence which was reported to the Committee in 1867, and noticed on the Minutes for that year. The negotiations had fallen into abeyance owing to the death of that gentleman. In 1873 the late Professor Donati had re-opened the question in conversation with him (Mr. Scott) at Vienna, but his death had again interrupted the arrangements.

Mr. Scott stated that he had applied, unofficially, to the Ministère de la Marine (Letter No. 2226), and had been informed (Letter No. 1393) that the Italian Government ought to address the French Government on the subject, and he was instructed to reply to M. Parlatore in that sense.

Submitted—Applications for Fishery Barometers from Greenore and Greencastle. Granted.

A cheque was drawn for petty cash for J. S. Harding, jun., for 25*l*.

The Committee then adjourned.

116, *Victoria Street, November* 23, 1874.

PRESENT :

Major-General Smythe in the Chair.

Mr. Galton. | Mr. Gassiot.

The Director was in attendance.

The Minutes of last meeting (November 16) were read and confirmed.

Mr. Scott submitted the following memorandum with reference to the present cost, in time, of the treatment of the observatory records, exclusive of any discussions of wind, &c. &c., from which it appears that the cost of furnishing the hourly values for vapour tension for the seven observatories would fall under 50*l.*, and that the table could be inserted on a blank quarter page of the sheets as at present issued :—

LAND OBSERVATORY ROOM.

To copy the "Hourly Values" occupies, on an average, *two persons* nine days a month.
To calculate Vapour Tension for each hour will occupy *one person* 13 days a month.
The work of the room for one year may be summarised thus :—

Copying Hourly Values - - - - - -	72 days.
Calculating Vapour Tension - - - - -	52 „
Preparing Tables of Maxima and Minima - - -	18 „
Calculating Five-day Means of Barometer, and Dry and Wet bulbs - - - - - - - -	67 „
Tabulating Anemograms for six extra Stations - -	46 „
Preparing Tables for Quarterly Weather Report - -	16 „
Work connected with Curves, &c. - - - - -	4 „

After allowing for holidays, &c., this leaves about eight days clear for other than the routine work of the room.

The consideration of this question was postponed.

Mr. Scott reported that the subscribers to the issue of the hourly values only numbered 16. He was instructed to issue a specimen sheet to all the recipients of the publications of the Office, with a note of the rate of subscription.

He submitted the following list for the free distribution of the sheets, which was adopted.

FREE DISTRIBUTION OF COPIES OF HOURLY OBSERVATIONS.

Libraries :
- Advocates, Edinburgh.
- Bodleian, Oxford.
- British Museum.
- FitzWilliam, Cambridge.
- Trinity College, Dublin.

Observatories (British) :
- Kew
- Royal.

Societies :
- Meteorological.
- Royal.
- Royal Astronomical.
- Scottish Meteorological.

Indian and Colonial :
- Bombay Observatory.
- Calcutta Meteorological Office.
- Cape Observatory.
- Madras Observatory.
- Melbourne Observatory.
- Sydney Observatory.
- Toronto Observatory.
- Wellington (N. Z.) Observatory.

Foreign :
- Berlin.
- Brussels Observatory.
- Christiania Meteorological Office.
- Copenhagen Meteorological Office.
- Florence, Ministry of Agriculture.
- Leipzig Observatory.
- Paris Meteorological Society.
- „ Observatory.
- St. Petersburg Observatory.
- Stockholm Meteorological Office.
- Utrecht Meteorological Office.
- Vienna Meteorological Office.
- Washington, Signal Office.
- Zurich Observatory.

SUBMITTED—The following STATEMENT respecting the RECORDS for October 1874, received from the SELF-RECORDING OBSERVATORIES, which have been examined at KEW OBSERVATORY (see Minutes 21st December 1868).

—	Aberdeen.		Armagh.		Falmouth.		Glasgow.		Kew.		Stonyhurst.		Valencia.	
ANEMOGRAPH :—														
Action - - - - - -	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.	Direction. Good.	Velocity. Good.
Records deficient, due to stoppage of clock -	0	0	24 hrs.	24 hrs.	0	0	0	0	0	0	0	0	0	0
„ „ other causes - -	0	0	*2 hrs.	3 hrs.	0	0	0	0	0	0	0	0	0	0
Orientation verified - - - - -	—	—	31st	—	16th	—	1st	—	5th	—	—	—	3rd	—
No. of errors discovered by subsidiaries -	0	0	0	0	0	1	0	0	0	0	0	2	0	1
„ „ irregular differences	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Result of 40 *Remeasurements* :—														
Greatest difference - - - - -	1·0	1·0	1·0	1·0	1·0	1·0	1·0	1·0	0·0	1·0	1·0	1·0	1·0	1·0
Mean difference irrespective of sign - -	0·1	0·2	0·2	0·2	0·2	0·3	0·2	0·2	0·0	0·1	0·3	0·4	0·3	0·4
Residual difference (— Kew) - - -	0·0	0·0	0·0	+0·1	0·0	+0·1	−0·2	+0·1	0	0·0	−0·1	−0·1	0·0	+0·3
RAIN GAUGE :—														
Action - - - - -	Fair.		Fair.		Fair.		Fair.		Fair.		Good.		Fair.	
Records deficient, due to stoppage of clock -	0		0		0		24 hrs.		0		0		0	
„ „ other causes - -	0		0		0		0		0		0		0	
Errors in tabulation - - - - -	0		4		0		2		0		2 in dating curves.		0	

BAROGRAPH :—							
Action - - - - - -	Good.	Good.	Good.	Good.	Good.	Good.	Good.
Photography - - - - - -	Do.	Do.	Do.	Fair.	Do.	Do.	Fair
Records deficient, due to stoppage of clock -	0	0	0	0	0	0	4 hrs.
„ „ failure of light -	0	0	1 hr.	0	0	0	0
„ „ other causes - -	0	0	0	0	0	0	0
No. of errors discovered—							
In entry of standard - - -	0	0	0	3	0	0	10
„ calculating residual correction - -	0	1	0	1	0	0	4
„ applying residual correction - -	0	0	0	19	0	0	2
„ subtraction in subsidiary tables -	0	0	0	0	0	0	1
„ tabulation by subsidiaries - -	0	0	0	0	0	0	0
„ „ irregular differences -	0	5	0	0	0	0	0
Result of 40 *Remeasurements :—*							
Greatest difference - - - - -	·0040	·0050	·0050	·0060	·0020	·0050	·0050
Mean difference irrespective of sign - -	·0015	·0022	·0018	·0021	·0010	·0017	·0019
Residual difference (— Kew) - - -	—·0010	+·0004	—·0004	—·0006	+·0003	+·0009	—·0011
Mean monthly difference between simultaneous barograph and barometer readings - -	0·0017	0·0024	0·0021	0·0016	0·0016	0·0021	0·0028

THERMOGRAPH :—													1½ days wet bulb re-tabulated at Kew.	
Action - - - - - - -	Good.†		Good.‡		Good.		Good.§		Good.		Good.‖		Good.	
Photography - - - - - -	Do.		Do.		Do.		Fair.		Do.		Do.		Do.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Records deficient, due to stoppage of clock -	0	0	3 hrs.	3 hrs.	1 hr.	1 hr.	0	0	0	0	0	0	0	0
„ failure of light - -	0	0	0	0	5 hrs.	12 hrs.	0	0	0	0	0	0	0	0
„ imperfectly moistened bulbs - -	—	0	—	0	—	0	—	0	—	1	—	0	—	0
„ „ partially frozen -	—	0	—	0	—	0	—	0	—	0	—	0	—	0
„ „ other causes - -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of errors discovered in entry of standard -	0	0	0	1	0	0	0	0	0	0	1	0	0	0
„ „ by subsidiary measurements -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
„ „ by subtraction in do. tables -	0	0	3	1	0	0	1	1	0	0	0	1	0	0
„ „ detected under glass scale -	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Result of 40 *Remeasurements :*														
Greatest difference - - -	0·20	0·20	0·30	0·20	0·10	0·10	0·20	0·20	0·10	0·10	0·20	0·20	0·20	0·20
Mean difference irrespective of sign - -	0·04	0·05	0·06	0·06	0·02	0·04	0·06	0·05	0·02	0·03	0·04	0·05	0·05	0·04
Residual difference (— Kew) - - -	+0·02	—0·02	—0·06	—0·05	0·00	—0·02	0·00	—0·02	0·00	—0·02	0·00	+0·01	0·00	—0·01
Mean monthly difference between simultaneous thermograph and thermometer readings -	0·12	0·23	0·24	0·23	0·06	0·05	0·12	0·09	0·15	0·14	0·17	0·24	0·22	0·25
No. of errors in maxima and minima - -	0	0	1	1	0	0	0	1	0	0	1	0	4	6
In entry of tabulated readings into tabulation sheets	0	0	1	1	0	0	2	0	0	0	0	1	2	0

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* Clock being cleaned.

† Correction to two days wet bulb readings have been applied at Kew.

‡ 3 days dry and wet have been re-tabulated at Kew.

§ 1 day dry has been re-tabulated at Kew.

‖ Corrections applied to all readings throughout the month at Kew.

Submitted—The following letter which had been sent in accordance with the instructions of the Committee at last meeting:—

Meteorological Office, 116, Victoria Street, London, S.W.

Dear Sir,

November 18, 1874.

In anticipation of the publication of the Report of the meeting of the Permanent Committee at Utrecht, in September last, I have to inform you that this Office intends publishing *in extenso* (A) the Observations made twice a day, at say 16 stations in the United Kingdom, on the Form now enclosed.

It further contemplates to publish (B) monthly *resumés* of Observations from other stations.

The Committee understand that the Meteorological Society has certain stations of the second order, which, as regards quality of observations and situation of the stations, would be desirable additions to the stations now in communication with this office.

I am instructed by the Committee "to communicate with the Meteorological Society, and ascer-"tain whether and on what terms the Society would be prepared to furnish monthly Observations "from certain stations to be selected by this Office."

I may say that we should propose to ask for not less than five of the stations A, and not more than 20 of the stations B.

I am, &c.
(Signed) Robert H. Scott,
Director.

G. J. Symons, Esq., Secretary,
The Meteorological Society.

Reported—That the invitation to the French Geographical Congress had been declined, as directed (Letter No. 2,252).

Read—A letter from Captain Toynbee, submitting an excellent log by Capt. W. Watson, R.M.S. "Parthia" (Minutes, p. 81), and suggesting that his diagrams of his Meteorological Observations should be printed by the Committee in their Quarterly Weather Reports.

Mr. Scott was instructed to express the marked thanks of the Committee to Capt. Watson. The question of publication of the diagrams was postponed.

Resolved—That the sum of 1,000*l.* be transferred from the deposit account of the Committee to their current account.

The following cheques for November were drawn on the signature of Major-General Smythe:—

			£	s.	d.
For Office:					
R. H. Scott	Salaries and wages		66	13	4
J. S. Harding, jun.			*20	13	4
J. S. Harding, sen.			†9	12	6
T. D. Bell			†7	0	0
For Observatories:					
Allan, Brothers, freight			7	7	1
R. Beckley, examiner of Observatory instruments			31	14	3
Hopkin and Williams, chemicals			1	1	8
S. Jeffery, waxed paper			9	10	0
T. Kerr, Valencia, salary			20	16	8
R. H. Curtis	Computations, &c.		12	10	0
A. J. Rigby			†9	12	6
C. H. Thompson			†5	15	0
C. Stodart			†10	10	0
J. A. Curtis			8	6	8
For Telegraphy:					
N. J. Holmes, Shetland telegrams			9	11	2
Wightman & Co., B. P. wrappers		5 10 0			
„ printing, &c.		1 10 6			
			7	0	6
F. Gaster	Computations, &c.		*16	5	6
W. L. Dallas			*10	3	4
F. Brodie			*8	13	4
Carried forward			272	16	10

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* Including allowance for extra attendance.

† Five weeks to the 28th November.

		£	s.	d.
Brought forward		272	16	10
For Ocean Meteorology:				
H. Toynbee, Marine Superintendent		33	6	8
P. Adie, repairing "A" instruments	11 19 0			
" " "M. O." "	13 18 6			
		25	17	6
Allan, Brothers, freight		4	6	6
L. P. Casella, thermometers		27	2	0
G. H. Simmonds, computations		6	6	0
Steel and Jones, "Shipping Gazette"		3	5	5
R. Strachan	Computations, &c.	‡20	0	0
C. Harding		*15	8	8
W. G. James		8	6	8
T. E. Allen		8	6	8
J. W. McVeagh		†5	15	0
For Office Expenses:				
J. S. Harding, jun., on account		110	0	0
Total		£540	17	11

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* Including allowance for extra attendance.

† Five weeks to the 28th November.

‡ Including allowance for care of instruments.

The Committee then adjourned.

116, *Victoria Street, December* 7, 1874.

PRESENT:

Major-General Smythe in the Chair.
Mr. De La Rue. | Major-General Strachey.
Captain Evans. | Sir Charles Wheatstone.
Sir E. Sabine.

The Director was in attendance.

The Minutes of last meeting (November 23) were read and confirmed.

Mr. Scott was instructed to inform the Board of Trade that the sum required by the Committee for the financial year 1875–6 would be 10,000*l.*, being the same sum as that voted during the current year.

The following detailed estimate was ordered to be printed on the Minutes:—

Meteorological Office, Estimates for the year 1875–6:—

	£	*s.*	*d.*	£	*s.*	*d.*
Office:—						
Salaries - - - - - -	1,320	0	0			
Rent, Fuel, &c. - - - - - -	600	0	0			
Office Expenses - - - -	180	0	0			
				2,100	0	0
Land Meteorology:—						
Expenses at Observatories - - -	2,600	0	0			
Computations - - - - - -	800	0	0			
				3,400	0	0
Telegraphy - - - - - -	1,600	0	0			
„ D.W. Charts, Inspections, &c. -	500	0	0			
Computations - - - - - -	650	0	0			
				2,750	0	0
Ocean Meteorology:—						
Marine Superintendent - - - - -	400	0	0			
Admiralty Instruments - - - - -	150	0	0			
Mercantile Marine do. - - - - -	250	0	0			
Computations - - - - - -	950	0	0			
				1,750	0	0
				£10,000	0	0

The question of the insertion of the hourly values for vapour tension on the sheets of tabulated readings (Minutes November 16 and 23) was taken up, and Mr. Scott was instructed to include this information on the sheets in question.

Submitted—The following reply from the Meteorological Society to the letter printed in last Minutes:—

Meteorological Society, Westminster,
December 5, 1874.

DEAR SIR,

YOUR letter of the 18th ult. has been carefully considered by the Council of this Society, and I have been directed to state that they will be happy to co-operate with the Meteorological Committee upon the terms specified in the enclosed extract from their Minutes.

I am, &c.
(Signed) G. J. SYMONS,
Secretary.

R. H. Scott, Esq., F.R.S.,
Director, Meteorological Office.

Conditions on which the Council of the Meteorological Society agree to supply the data required by the Meteorological Office from any of the following stations, viz.:—

Dartmoor.
Bath.
Brighton.
Crowborough Beacon.
Strathfield Turgiss.
Audley End.
Cheadle.
Buxton.
Calcethorpe, Louth.
Hestholme, Aysgarth.

1. All original documents are to remain the property of the Society.

2. Verified copies of the detailed observations on the Society's large form to be supplied from five of the above stations in consideration of a minimum payment of 25*l.* per annum, and any further number of stations agreed upon at 5*l.* per annum per station.

3. Verified copies of mean monthly values required for the form referred to as B in Mr. Scott's letter of the 18th November 1874, to be supplied from any number of the Society's stations, not exceeding 20, at the rate of 2*l.*.10*s.* per annum per station.

4. It is understood that the Society can obtain by application at H.M.'s Stationery Office, at the cost of press work and paper, copies of any documents printed by the Meteorological Office.

5. In all cases of publication of tabular matter supplied by the Society, it is to be marked as having been furnished by the Society.

6. This arrangement to be terminable at the close of any civil year upon three months' previous notice being given by either party.

7. All official communications relating to matters incident to this arrangement to be in writing.

8. All communications from the Meteorological Office regarding the observations contemplated in this arrangement to be made through the officers of the Society and not direct to the observers.

The proposal of the Meteorological Society was accepted as regards general scope and pecuniary remuneration; the final arrangement of the clauses being left to Mr. Scott, with special instructions so to word them as to prevent any misunderstanding with the Fellows of the Society who furnish the observations.

Mr. Scott reported that he had in the Office certain returns from stations of the second order for the years 1873 and 1874, which might be published in the forms A. and B., and he was authorised to make a commencement of this publication in the concluding part of the Quarterly Weather Report for 1873, which is now nearly ready.

Submitted—The following Reports:—

SIR, December 7, 1874.

I HAVE tested the accuracy of the scales used for measuring the Thermograms of the seven observatories, and beg to lay before you the following report:—

For finding the scale values this method was adopted:—Measurements were made, to thousandths of an inch, of the distance from the photographed zero lines to points of the curves for which there were readings of the standard thermometers, care being taken that the temperature as shown by the curve was in every case quite steady and the definition good. These measures were then grouped together under each degree and meaned. In this way the chance of error from the standard having been read early or late, or read incorrectly, has been reduced as much as possible. Every available standard reading found in 18 months' curves has been used.

The values found have in no case been the same for both the dry and wet bulbs, but *Valencia* is the only place where the difference is great, (except Aberdeen, where two scales are now used), and further at all observatories the values got by using the measures made from the *upper* zero lines differ somewhat from those obtained by the *lower* zero lines, as will be seen from the following table:—

—	Dry.		Wet.	
	Upper Zero.	Lower Zero.	Upper Zero.	Lower Zero.
Valencia - -	·664	·645	·694	·682
Armagh - -	·689	·701	·700	·713
Glasgow - -	—	·755	—	·763
Aberdeen - -	·723	·761	·745	·751
Falmouth - -	·745	—	·757	—
Stonyhurst - -	·722	·717	·722	·729
Kew - - -	·761	·752	·751	·750

At Aberdeen the difference in the dry bulb is very great, and measures made of the lines on the curves caused by equidistant marks on the stem of the thermometer seems to confirm the suggestion made by Mr. Whipple that the source of the error is in the lens.

The following table shows the *mean* values for the dry and wet bulbs compared with the present values of 10°:—

Observatory.	Present Value of 10°.	Dry. —— Mean of Upper and Lower.	Wet. —— Mean of Upper and Lower.	Mean of Dry and Wet.	Difference between Present Value and Mean.
Valencia -	·668	·655	·688	·672	·004
Armagh -	·662	·695	·706	·700	·038
Glasgow -	·770	·755	·763	·759	·011
Aberdeen -	—	—	·748	—	—
Falmouth -	·760	·745	·757	·751	·009
Stonyhurst -	·700	·720	·726	·723	·023
Kew - -	·750	·756	·750	·753	·003

From this it will be seen that at *Armagh* the present scale differs ·038 ins. from the mean, and at Stonyhurst ·023 in., whilst at Valencia it differs ·020 from the *wet* bulb value, but not so much from the *dry*.

I therefore beg to suggest that new scales should be ordered for Armagh, Stonyhurst, and Valencia wet bulb. At the other observatories the differences between the present scales and the means now found do not seem sufficiently large to need new scales.

I am, &c.
(Signed) R. H. CURTIS.

R. H. Scott, Esq., F.R.S.

M. O. 2550.

Sɪʀ, Kew Observatory, December 4, 1874.

I HAVE read Mr. Curtis's Report upon the Thermograph Scales now in use at the different Observatories of the Committee.

The values he has brought out appear to indicate very clearly the desirability of constructing new scales for the instruments specified. I would, however, take the liberty of suggesting that before deciding upon definitely adopting Mr. Curtis's scales, the Stonyhurst Observers should be requested to perform the experiment, suggested by Mr. Hostage some years since, and determine the scale values of their thermometers by immersing them in water of known temperature as they stand fixed *in situ.*

In the event of this experiment proving the calculated values to be the correct ones, the other new ones determined by curve measurements may be accepted as right with confidence.

The irregularity in the Aberdeen dry bulb curve appears only to be accounted for by the supposition that the lens gives a distorted image of the thermometer. Before ordering the grinding of a new lens I would suggest that Professor D. Thomson be asked temporarily to remove the lens from the instrument, and take a photograph of his tabulating glass scale with it, an operation which may be performed with any ordinary photographic camera.

The negative so obtained will furnish decisive proof of the condition and performance of the lens.

I am, &c.

R. H. Scott, Esq., F.R.S. (Signed) G. M. Wʜɪᴘᴘʟᴇ.

The further consideration of the subject was postponed until the opinion of Professor Thomson had been obtained.

Read—The following correspondence:—

M. O. 2487.

Admiralitat, Berlin, November 27, 1874.

THE Maritime Conference held at London in September last decided that henceforth Meteorological Observations made on board ships of any kind should be carried on according to instructions to be adopted, as far as possible, by all nations. The Hydrographic Office of the Imperial German Admiralty, about to issue such instructions, would, therefore, with pleasure, take such steps necessary to insure in carrying on Meteorological Observations in the navy, uniformity with the new Instructions framed by the Meteorological Office, and for this reason kindly request the same to forward a copy of them at the earliest convenience.

(Signed) G. Nᴇᴜᴍᴀʏᴇʀ.

The Meteorological Office.

Letter 2356. Meteorological Office, London,

Sɪʀ, December 1, 1874.

WITH reference to your letter of the 27th ultimo (H. 2898) asking for a copy of the new Instructions to be issued by this Office to captains of ships keeping Meteorological registers, I beg to inform you that you will have already received a proof copy in the Report of the Maritime Conference.

It is not intended to issue the Instructions until after the publication of that Report, when I shall be happy to place copies at your disposal.

I am, &c.

Hrn. Dr. G. Neumayer, (Signed) Rᴏʙᴇʀᴛ H. Sᴄᴏᴛᴛ,
Hydrographer, Berlin. Director.

Read—A letter from Capt. Toynbee, submitting excellent logs by—

Capt. T. M. Jones, R.N., H.M.S. "Glasgow," Log kept by Nav. Lieut. Robert Jackson.
Capt. D. F. M'Kechnie, barque "Cottica," (Minutes p. 50.)
,, W. H. Stuart, schooner "Richmond," (Minutes 1872, p. 43.)

Mr. Scott was instructed to convey the marked thanks of the Committee to these gentlemen.

It was resolved, with reference to Capt. Toynbee's recommendation as regards Capt. Watson's diagrams of his passages across the Atlantic, that it was not expedient at present to publish these diagrams.

Mr. Scott reported that with reference to the sum of 80*l.*, placed at his disposal *pro tempore* for the entertainment of the Maritime Conference had not been drawn, as the amount of expenses incurred had been met by the kind contributions of some of the members of the Committee.

The Committee then adjourned.

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